CONTENTS

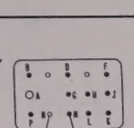
TRADE NAME	MODEL	SET AND FOLDER No.
Admiral	Chassis 21F1, 21G1, 21K1, 21L1, 21P1, 21Q1, & Radio Ch. 3C1 Tel. Rec.	127-1A
Aircastle	REV248	127-2
Aircastle	358VM	127-3
Airline	05WG-1813A	127-4
Crosley	11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U (Ch. 301)	127-5
Hoffman	950, 950A, 951, 951A, 952, 952A, 960, 961, 962, (Ch. 172, 174, 176) Tel. Rec.	127-6
Majestic	17DA, 17GA, 17HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710 (Ch. 101, 102, 103, 105) Tel. Rec.	127-7
Masco	MB-60	127-8
Mitchell	1268R	127-9
Sentinel	1U425, 1U428, 1U432, 425, 528, 432 Tel. Rec.	127-10
Tele-Tone	206	127-11
Tele-Tone	TV324, TV325, TV326, TV328, TV329, TV335, TV336, TV340, TV345 (Ch. TAP, TAP-1, TAP-2) Tel. Rec.	127-12
Westinghouse	H-643K16 (Ch. V-2179, V-2179-1) Tel. Rec.	127-13
Zenith	H880, H880R (Ch. 8H20 Revised)	127-14
Zenith	H2229R, H2230E, R, H2241R, H2252R, H2253E, H3068R, H3273E, H3274R (Ch. 22H21) Tel. Rec.	127-1A

3C1 RADIO

SERVICING RADIO SEPARATELY

The radio can be operated without the television chassis if a 2PA1 power supply (used in TV-radio-phono models employing the 20Z1 (12") television chassis) is available. To operate the radio, connect a 3,000 ohm, 5 watt resistor (part 61A1-15) from pin "M" to "N" on the power supply socket.

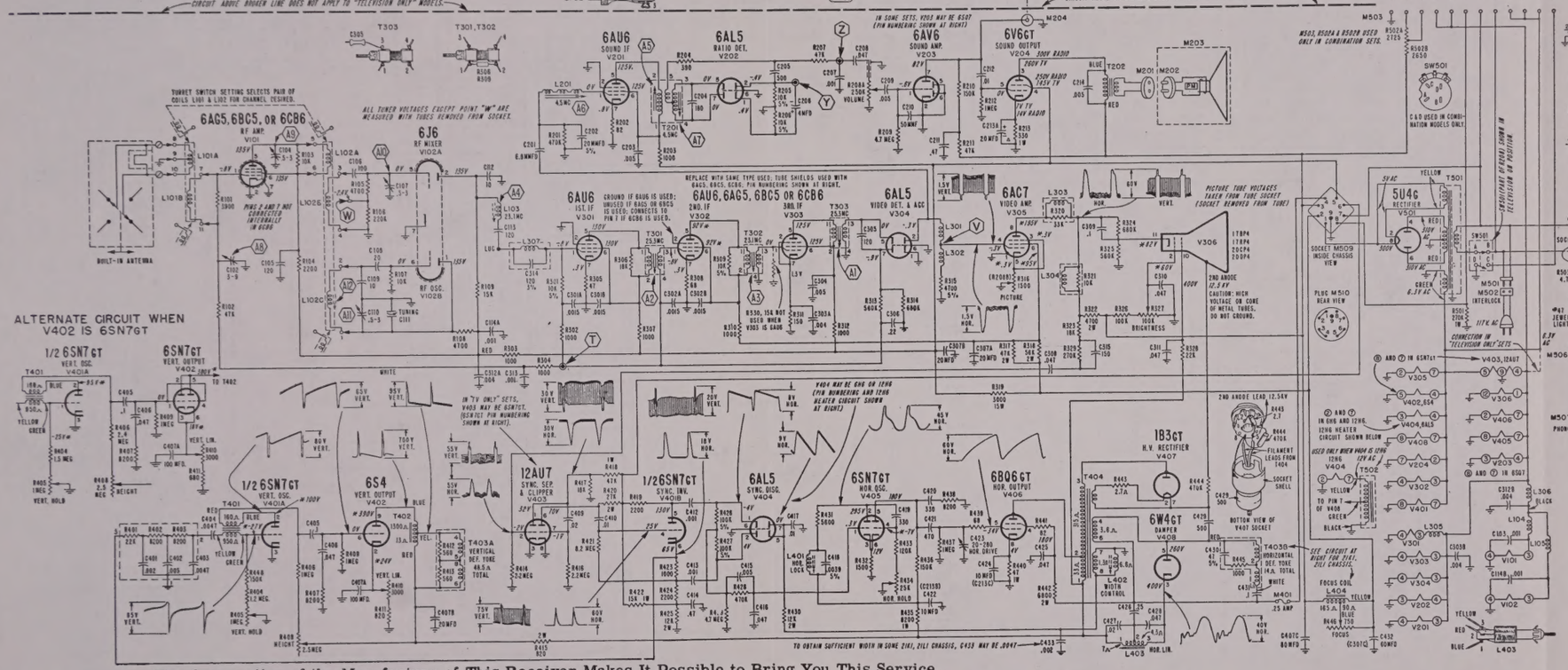
This resistor drops the B plus voltage for proper operation.



Power Supply Socket, (Inside Chassis View).

SERVICING TV SEPARATELY

In combination models, to service the television chassis with the radio disconnected, it will be necessary to complete the heater circuit by connecting a jumper wire between pins "L" and "K" of socket M503. See schematic.


6BE6 CONVERTER V701
6BA6 IF AMP V702
6SQ7 DET-AVC-AF AMP. V703
6AU6 SOUND IF V201
6AL5 RATIO DET. V202
6AV6 SOUND AMP. V203
6V6GT SOUND OUTPUT V204
6AG5, 6BC5, OR 6CB6 RF AMP. V101
6J6 RF MIXER V102A
6AU6 1ST IF V301
6AU6, 6AG5, 6BC5 OR 6CB6 2ND. IF V302
6AU6, 6AG5, 6BC5 OR 6CB6 3RD. IF V303
6AL5 VIDEO DET. & AGC V304
6AC7 VIDEO AMP. V305
1B3GT H.V. RECTIFIER V407
6W4GT DAMPER V408
5U4G RECTIFIER V501
12H6 OR 6H6 V404
6SN7GT V403
1/2 6SN7GT VERT. OSC. V401A
6SN7GT VERT. OUTPUT V402
6S4 VERT. OUTPUT V402
12AU7 SYNC. SEP. & CLIPPER V403
1/2 6SN7GT SYNC. INV. V401B
6AL5 SYNC. DISC. V404
6SN7GT HOR. OSC. V405
6BQ6GT HOR. OUTPUT V406
CIRCUIT ABOVE BROKEN LINE DOES NOT APPLY TO "TELEVISION ONLY" MODELS
ALTERNATE CIRCUIT WHEN V402 IS 6SN7GT
FOCUS COIL AND DEFLECTION YOKE CONNECTORS USED IN 21K1, 21L1 CHASSIS

The Cooperation of the Manufacture of This Receiver Makes It Possible to Bring You This Service.

TV CHASSIS NOTES

The chassis used in these sets are electrically the same as the 21B1, 21C1 chassis, or the 21H1, 21I1 chassis used in previous Admiral sets. Note the mechanical changes such as relocation of the AC interlock connector (in all but a few early sets), the change in picture tube mounting, and the provision of a door (in all but a few early sets) in the high voltage housing for access to the horizontal output fuse.

The 21F1, 21G1, 21P1, 21Q1 chassis (17" rectangular tube) and the 21K1, 21L1 chassis (20CP4, 20DP4 rectangular tube) are the same electrically. The 21F1, 21G1 chassis use a glass tube (17BP4, 17RP4) ; the 21P1, 21Q1 chassis use a metal tube (17CP4).

The 21G1, 21Q1, 21L1 chassis are used in combination sets; the 21F1, 21P1, and 21K1 are used in "television only" sets.

Chassis used in the straight TV and combination models differ in that the combination models have connectors for supplying power to the radio and cabinet pilot light.

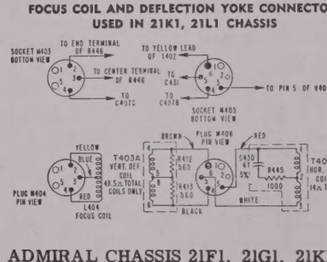
TV VOLTAGE DATA

(Voltages given on schematic diagram)

- PICTURE control turned fully clockwise. CHANNEL control set on an unused channel. Other front controls set at approximately half rotation. Vert. Lin. and Height set at approximately half rotation.
- Voltages marked with an asterisk * will vary widely with control setting. In combination models, B+ voltages in TV chassis will be slightly higher when set is switched to radio position. Alternate voltage readings for radio and TV are shown for sound output tube V204 (6V6GT).
- Line voltage 117 volts AC.
- Voltages measured with a vacuum tube voltmeter between tube socket terminals and chassis, unless otherwise indicated. Voltages at V101, V102, V306 measured from top of socket with tube removed.
- Antenna disconnected from set with terminals shorted.
- Under operating conditions, AGC (Automatic Gain Control) voltage developed at test point "T" (see schematic) should measure approximately —3 volts. This voltage depends on TV signal strength.

Model Numbers	TV Chassis	Picture Tube	Type
17K11, 17K12, 27K12	21F1	17BP4 or 17RP4	TV only
27K15, 27K16, 27K17, 27K25, 27K26, 27K27, 27K35, 27K36, 27K46	21F1 using	17BP4 or 17RP4	TV only
	21P1 using	17CP4	
37K15, 37K16, 37K27, 37K28, 37K35, 37K36	21G1 using	17BP4 or 17RP4	TV-radio-phono
	21Q1 using	17CP4	
221K16, 221K16A, 221K26, 221K28, 221K35, 221K36	21K1	20CP4 or 20DP4	TV only
321K15, 321K16, 321K18, 321K27, 321K35, 321K36	21L1	20CP4 or 20DP4	TV-radio-phono
321K46, 321K47, 321K49	21L1	20CP4 or 20DP4	Tele-bar

FOR 5D2 RADIO SEE PHOTOFACT FOLDER 2 SET 118.


SOCKET M403 BOTTOM VIEW
SOCKET M405 BOTTOM VIEW
PLUG M406 PIN VIEW
PLUG M404 PIN VIEW
T403A VERT. DEF. COIL 48.5 Ω TOTAL COILS ONLY
T403B HOR. DEF. COIL 14A TOTAL
L404 FOCUS COIL

ADMIRAL CHASSIS 21F1, 21G1, 21K1,21L1, 21P1, 21Q1, &3C1, 5D2

22H21 CHASSIS

MODELS

H2229R	H2241R	H3068R
H2230R	H2252R	H3273E
H2230E	H2253E	H3274R

Component parts used in the 22H21 chassis are the same as for the 23H22 chassis with the following exceptions:

OMIT:

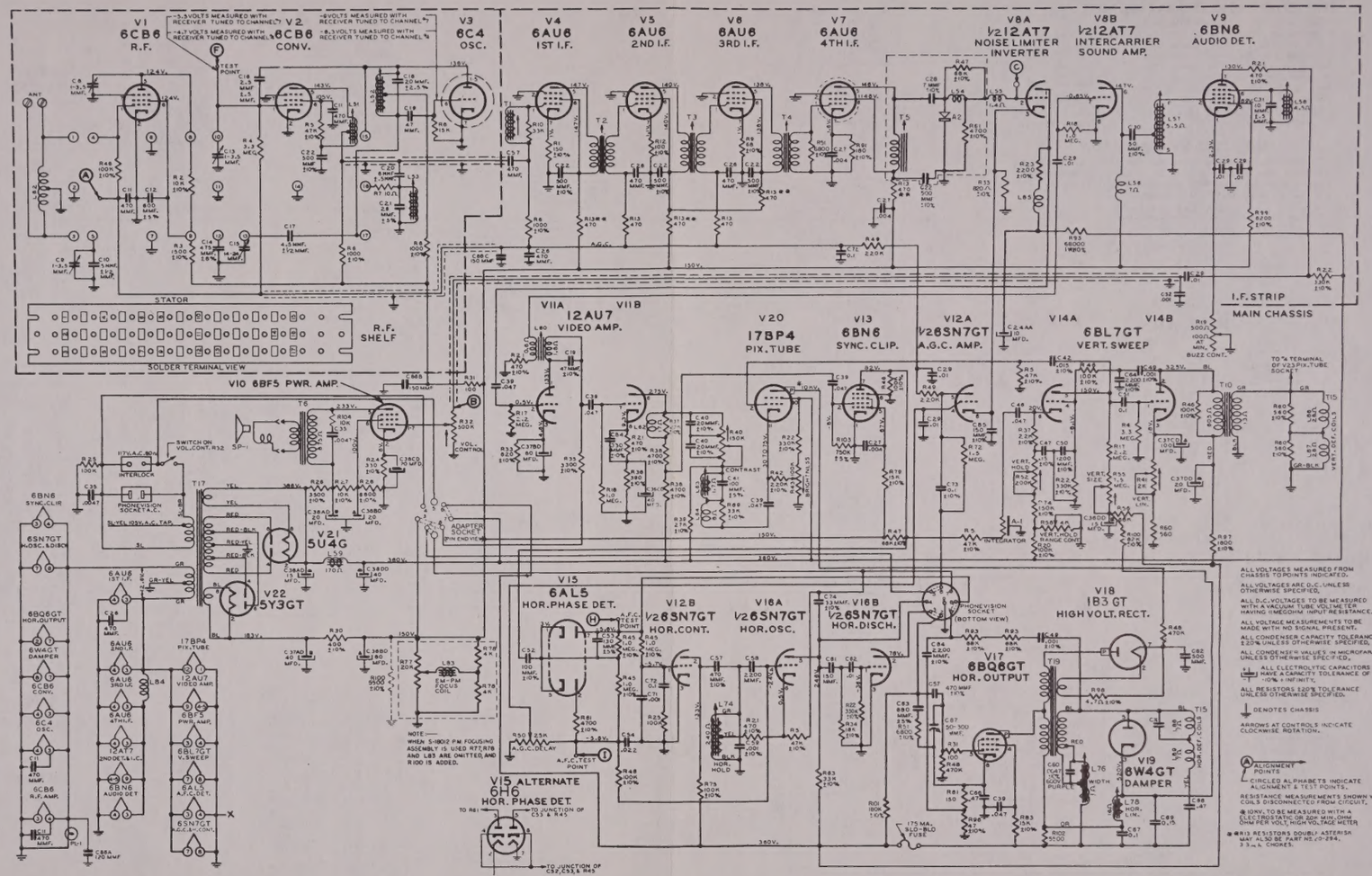
22-1851	.001 Mfd. (Molded)	1000V	
54-139	3/8-32x9/16 Hex Palnut (used on 63-1675)		
63-1675	Horizontal Drive Control		
63-1744	100 ohm 1/2W 20%	Ins. Res.	
63-1751	150 ohm 1/2W 20% (2 used)	" "	
63-1813	4700 ohm 1/2W 10%	" "	
63-1883	220K ohm 1/2W 10%	" "	
63-2017	4000 ohm 5W 10% WW (or 63-2333 or 3065)	" "	
63-2099	Focus Control		
63-2343	7500 ohm 10W 10% WW (Replaced 63-2145 or 2022 or 3066)	" "	
78-755	Octal Tube Socket		
80-824	Tube Plate Connector Spring		
136-20	Fuse		
S-17435	Horizontal Sweep Trans. Assembly		
S-17861	Mechanical Centering & Focus Assem. (or alt. S-17230)		
	6BQ6GT Tube		

ADD:

C57	22-1138	470 Mmfd. (Molded) Mica	500V	.20
C60	22-1849	.0047 Mfd. (Molded)	600V	.26
C87	22-2291	Single Section Trimmer (or 22-2312)		
R51	63-1820	6800 ohm 1/2W 10%	Ins. Res.	.21
R101	63-1880	180K ohm 1/2W 10%	" "	.21
R102	63-3136	5500 ohm WW 10W 10% (or 63-2358)	" "	
	80-744	Focus Mtg. Spring (used with S-17290)		.02
	80-869	Focus Mtg. Spring (used with S-18012)		
	136-21	Fuse		.25
	S-17290	Mechanical Centering & Focus Assy. (or alt. S-18012)		6.00
T19	S-17927	Horiz. Sweep Trans. Assem.		

Cabinet Parts

H2229R is the same as H2329R
H2230R is the same as H2330R
H2230E is the same as H2330E
H2241R is the same as H2341R
H2252R is the same as H2352R
H2253E is the same as H2353E
H3068R is the same as H3168R
H3273E is the same as H3373E
H3274R is the same as H3374R


V1 6CB6 R.F.
V2 6CB6 CONV.
V3 6C4 OSC.
V4 6AU6 1ST I.F.
V5 6AU6 2ND I.F.
V6 6AU6 3RD I.F.
V7 6AU6 4TH I.F.
V8A 1/2 12AT7 NOISE LIMITER INVERTER
V8B 1/2 12AT7 INTERCARRIER SOUND AMP.
V9 6BN6 AUDIO DET.
V10 6BF5 PWR. AMP.
V11A V11B 12AU7 VIDEO AMP.
V12A 1/2 26SN7GT A.G.C. AMP.
V12B 1/2 26SN7GT HOR. CONT.
V13 6BN6 SYNC. CLIP.
V14A V14B 6BL7GT VERT. SWEEP
V15 6AL5 HOR. PHASE DET.
V15 ALTERNATE V16 HOR. PHASE DET.
V16A 1/2 26SN7GT HOR. OSC.
V16B 1/2 26SN7GT HOR. DISCH.
V17 6BQ6GT HOR. OUTPUT
V18 1B3 GT HIGH VOLT. RECT.
V19 6W4GT DAMPER
V20 17BP4 PIX. TUBE
V21 5U4G
V22 5Y3GT
R.F. SHELF
STATOR
SOLDER TERMINAL VIEW
I.F. STRIP MAIN CHASSIS
INTERLOCK
PHONEVISION SOCKET A.C.
ADAPTER SOCKET (PIN END VIEW)
PHONEVISION SOCKET (BOTTOM VIEW)
F.M. FOCUS COIL
HOR. HOLD
HOR. LIN.
WIDTH
PURITY
VERT. HOLD
VERT. SIZE
VERT. LIN.
VERT. OSC. CONT.
INTEGRATOR
CONTRAST
BUZZ CONT.
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL D.C. VOLTAGES TO BE MEASURED WITH A VACUUM TUBE VOLTMETER HAVING 11MEGOHM INPUT RESISTANCE.
ALL VOLTAGE MEASUREMENTS TO BE MADE WITH NO SIGNAL PRESENT.
ALL CONDENSER CAPACITY TOLERANCES ±20% UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL ELECTROLYTIC CAPACITORS HAVE A CAPACITY TOLERANCE OF -10% +INFINITY.
ALL RESISTORS ±20% TOLERANCE UNLESS OTHERWISE SPECIFIED.
DENOTES CHASSIS
ARROWS AT CONTROLS INDICATE CLOCKWISE ROTATION.
ALIGNMENT POINTS
CIRCLED ALPHABETS INDICATE ALIGNMENT & TEST POINTS.
RESISTANCE MEASUREMENTS SHOWN WITH COILS DISCONNECTED FROM CIRCUIT.
*10MV. TO BE MEASURED WITH A ELECTROSTATIC OR 20K MIN. OHM PER VOLT HIGH VOLTAGE METER
**R13 RESISTORS DOUBLY ASTERISK MAY ALSO BE PART NO. 70-284.
3 1/4 K CHOKES.
NOTE— WHEN S-18012 FM FOCUSING ASSEMBLY IS USED R77, R78 AND L83 ARE OMITTED, AND R100 IS ADDED.

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

ZENITH CHASSIS 22H21

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 127 FOLDER 1A

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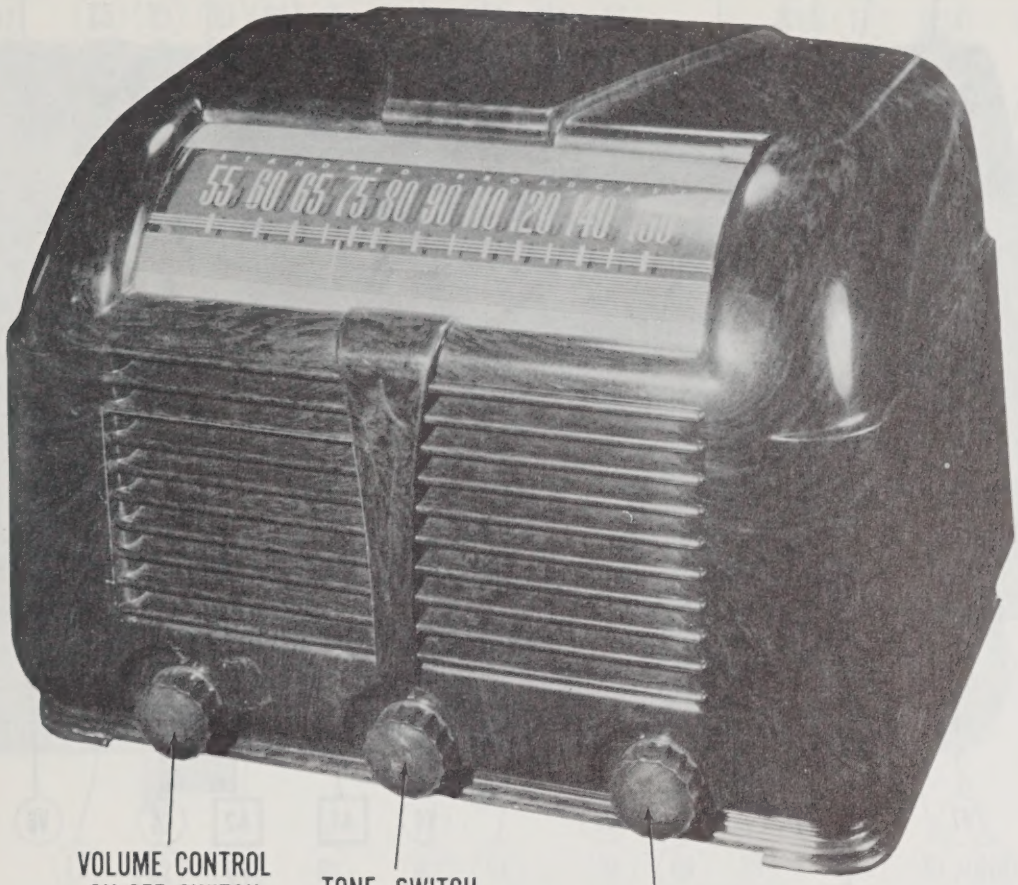

AIRCASTLE
MODEL REV248

AIRCASTLE
MODEL REV248

AIRCASTLE MODEL REV248

TRADE NAME	Aircastle, Model REV248
SUPPLIER	Spiegel, Inc., 1061 W. 35 St., Chicago 9, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .23Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to the calibration mark near the left hand end of the dial backplate.

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.002MFD	High side to pin 8 (grid) of 12SA7 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL REV248

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12SK7	12SK7	8N	
V2	Converter	12SA7	12SA7	8R	
V3	IF Amplifier	12SK7	12SK7	8N	
V4	Det. -AVC-AF	12SQ7	12SQ7	8Q	
V5	Power Output	35L6GT	35L6GT	7AC	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150		PRS1010D4A		EDL4415C		TVA-3436	Filter Blue
B	40	150							Filter Red
C2	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Screen
C4	.1	100		P288-1	DF-104	PTE4P1		2TM-P1	Decoupling
C5	150	500		1468-00015	D6-151	5W5T15	GP2K-150	1FM-315	RF Coupling
C6	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C7	5000	500		1467-005	DD-502	1D5D5	811-005	1FM-25	Audio Coupling
C8	470	500		1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	AF Amp. Plate
C9	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C10	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Output Plate
C11	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.
C12	.2	400		P488-22		GT4P2		72P53	Line Isolation
C13	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

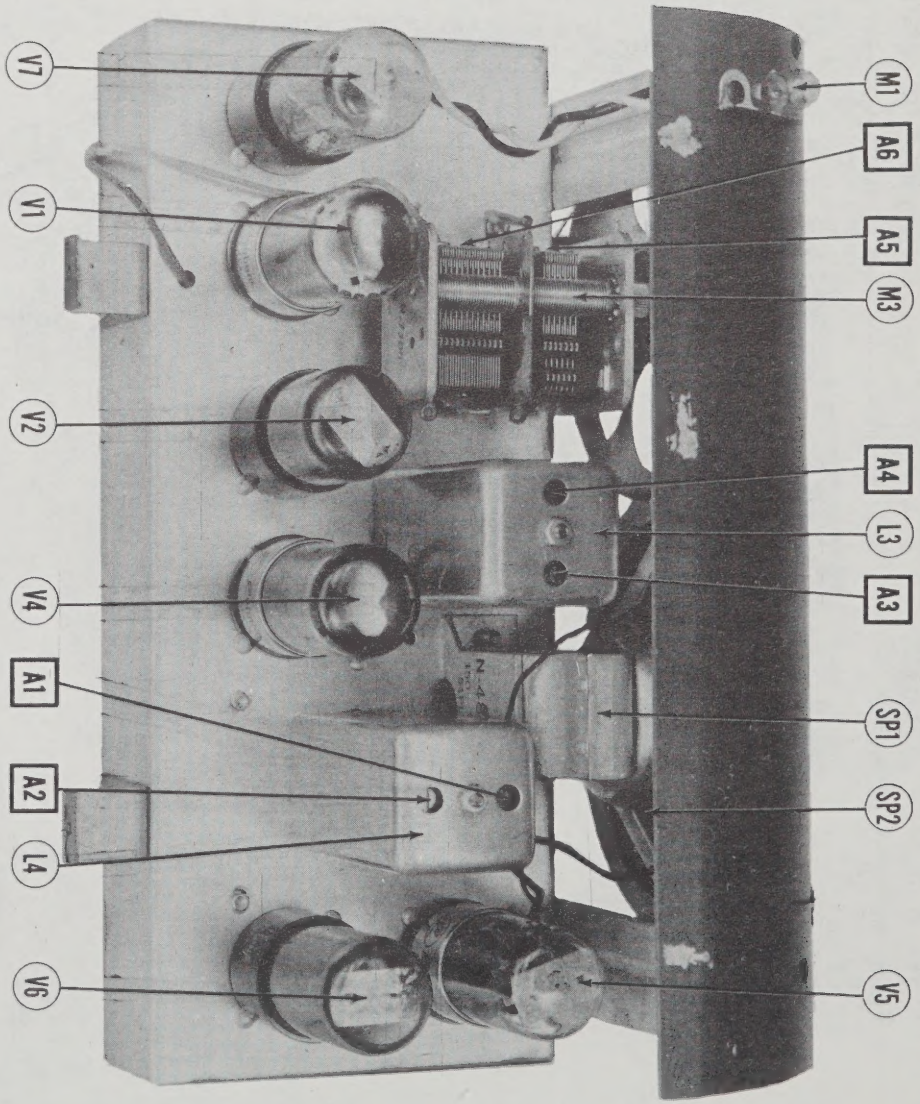
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½		Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft			Not req.	KSS-3	Not req.	Attach to R1A Per Instructions
C	Switch			76-1	SWB	Not req.	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
R2	50KΩ	½			RF Amp. Screen
R3	2200Ω	½		BTS-2200	RF Amp. Plate
R4	5lKΩ	½			Conv. Grid
R5	22KΩ	½			Osc. Grid
R6	470Ω	½		BTS-470	Decoupling
R7	82Ω	1		BTA-82	IF Amp. Cathode
R8	1Meg	½		BTS-1Meg	AVC Network
R9	5lKΩ	½		BTS-47K	AVC Network
R10	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid
R11	250KΩ	1		BTA-270K	AF Amp. Plate
R12	470KΩ	½		BTS-470K	Output Grid
R13	180Ω	½		BTS-180	Output Cathode
R14	1200Ω	1		BTA-1200	Filter
R15	33Ω	½			Surge Limiter
R16	33Ω	1		BW-1-33	Surge Limiter - Wire Wound
R17	180KΩ	½		BTS-180K	Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.45KΩ	3.8Ω	152Ω Tap 5.6Ω	.5Ω	N4875	A-3330		R0-3	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-105		
SP1	PM	3.8Ω	N4868	Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 1/2"	9/16"				

R F COILS

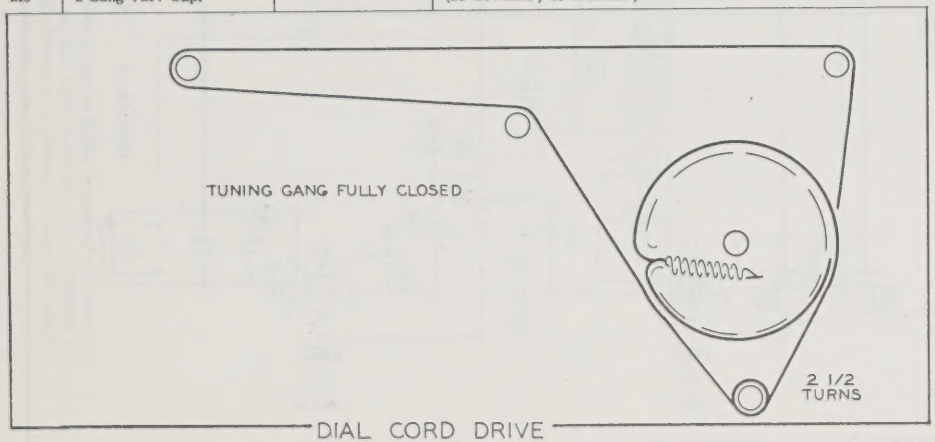
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.5Ω				
L2	Osc. Coil	.7Ω	7.8Ω		14-1073	
L3	1st IF	15Ω	15Ω			
L4	2nd IF	20Ω	19Ω			

DIAL LIGHTS

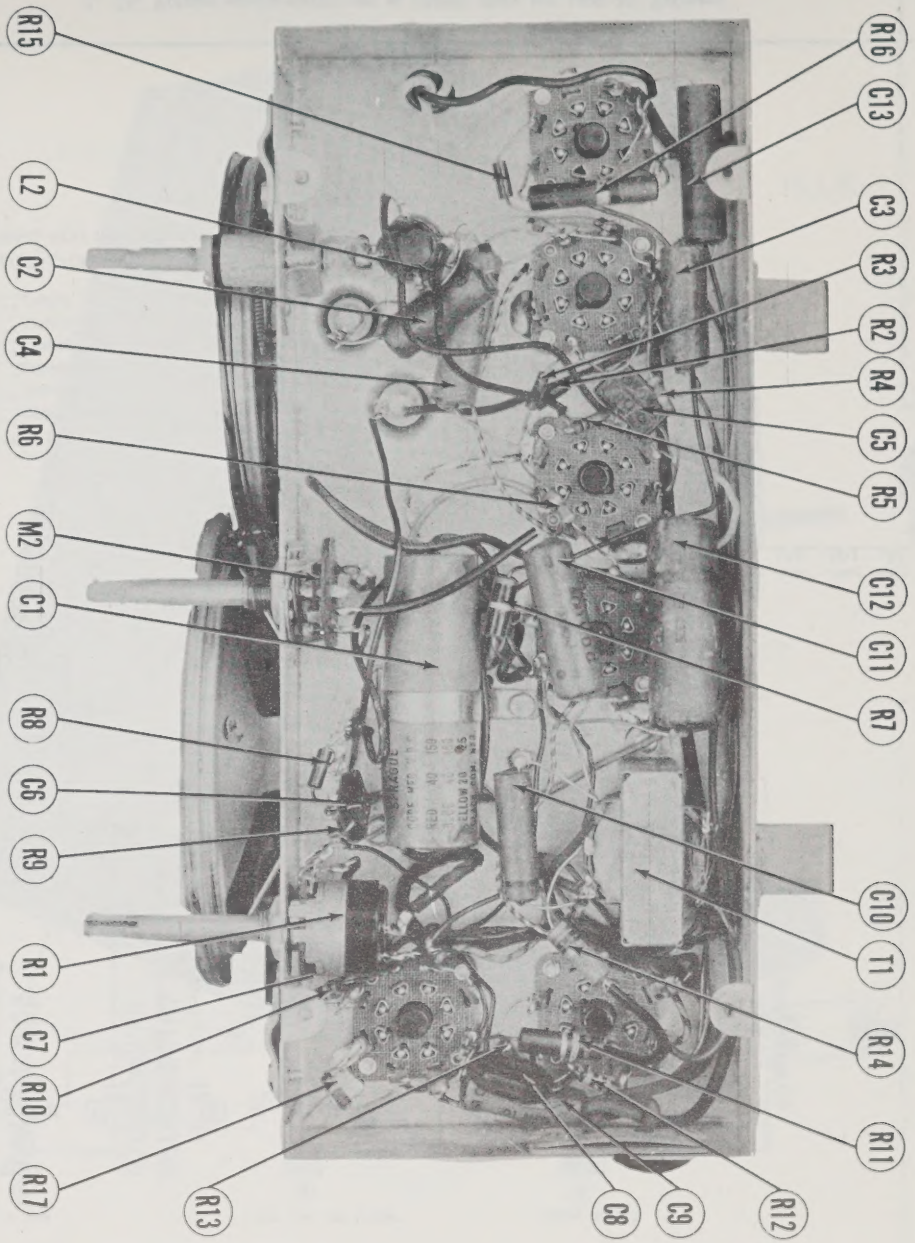
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRCASTLE PART No.		
M1	Bayonet	6-8	.15	Brown			Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M2	Switch		Tone
M3	2 Gang Var. Cap.		(22-397MMF, 18-130MMF)



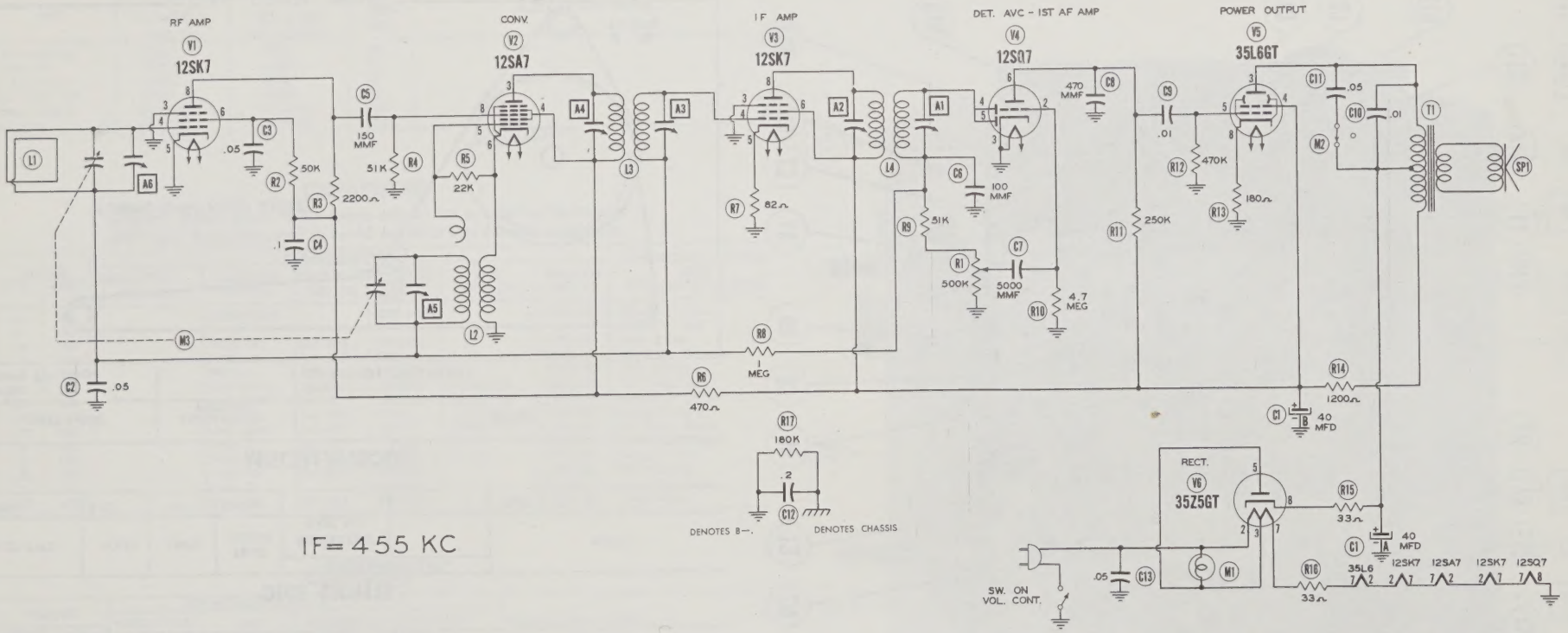
CHASSIS—BOTTOM VIEW



SET 127 FOLDER 2

AIRCASTLE MODEL REV248

AIRCASTLE MODEL REV248



IF= 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7GT	0V	25VAC	0V	-.1VDC	0V	40VDC	13VAC	70VDC
V 2	12SA7GT	0V	25VAC	75VDC	75VDC	§-8.3VDC	0V	38VAC	0V
V 3	12SK7GT	0V	50VAC	1VDC	-.1VDC	1VDC	80VDC	38VAC	80VDC
V 4	12SQ7GT	0V	-.5VDC	0V	-.4VDC	-.4VDC	50VDC	13VAC	0V
V 5	35L6GT	0V	50VAC	105VDC	80VDC	0V	0V	85VAC	5.3VDC
V 6	35Z5GT	0V	117VAC	108VAC	85VAC	108VAC	110VDC	80VAC	112VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7GT	180KΩ	26Ω	0Ω	1.5Meg	0Ω	†50KΩ	14Ω	†3.9KΩ
V 2	12SA7GT	180KΩ	26Ω	†1.7KΩ	†1.7KΩ	22KΩ	.7Ω	40Ω	50KΩ
V 3	12SK7GT	180KΩ	55Ω	82Ω	1.5Meg	82Ω	†1.2KΩ	40Ω	†1.2KΩ
V 4	12SQ7GT	180KΩ	4.7Meg	0Ω	550KΩ	550Ω	†250KΩ	14Ω	0Ω
V 5	35L6GT	Inf.	55Ω	†190Ω	†1.2KΩ	470KΩ	0Ω	90Ω	180Ω
V 6	35Z5GT	Inf.	150Ω	145Ω	90Ω	145Ω	†33Ω	120Ω	50KΩ

† MEASURED FROM PIN 8 OF V 6

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRCASTLE MODEL 358VM

AIRCASTLE MODEL 358VM

AIRCASTLE MODEL 358VM

AIRCASTLE MODEL 358VM

TRADE NAME	Aircastle, Model 358VM
SUPPLIER	Spiegel, Inc. 1061 W. 35 St., Chicago 9, Illinois
TYPE SET	AC Operated Automatic Record Player With 3 Tube Amplifier
TUBES (THREE)	Types 12AT6 AF Amp., 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .26 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 406 IN PHOTOFACT SET 102 FOLDER 16 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AT6	12AT6	7BT	
V2	Power Output	50C5	50C5	7CV	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	1010A	PRS150/40-30		EDL44215		TVA-3451	Filter Red.
B	40	150		-20		BR202A		TVA-1205	Filter Red
C	20	150		PRS25/25					Filter Yellow
D	20	25							Output Cath. Blue
C2	.1	200	803	P288-1	DF-104	PTE4P1		2TM-P1	Line Isolation
C3	10000			BPD-01	DD-103	PTE4S1	821-01	36C1	Audio Coupling *
C4	10000		825	BPD-01	DD-103	PTE4S1	821-01	36C1	Tone Comp.
C5	10000		814	BPD-01	DD-103	PTE4S1	821-01	36C1	Audio Coupling †

* Items C3 and R4 are combined into one unit.
† Items C5 and R5 are combined into one unit.

CONTROLS

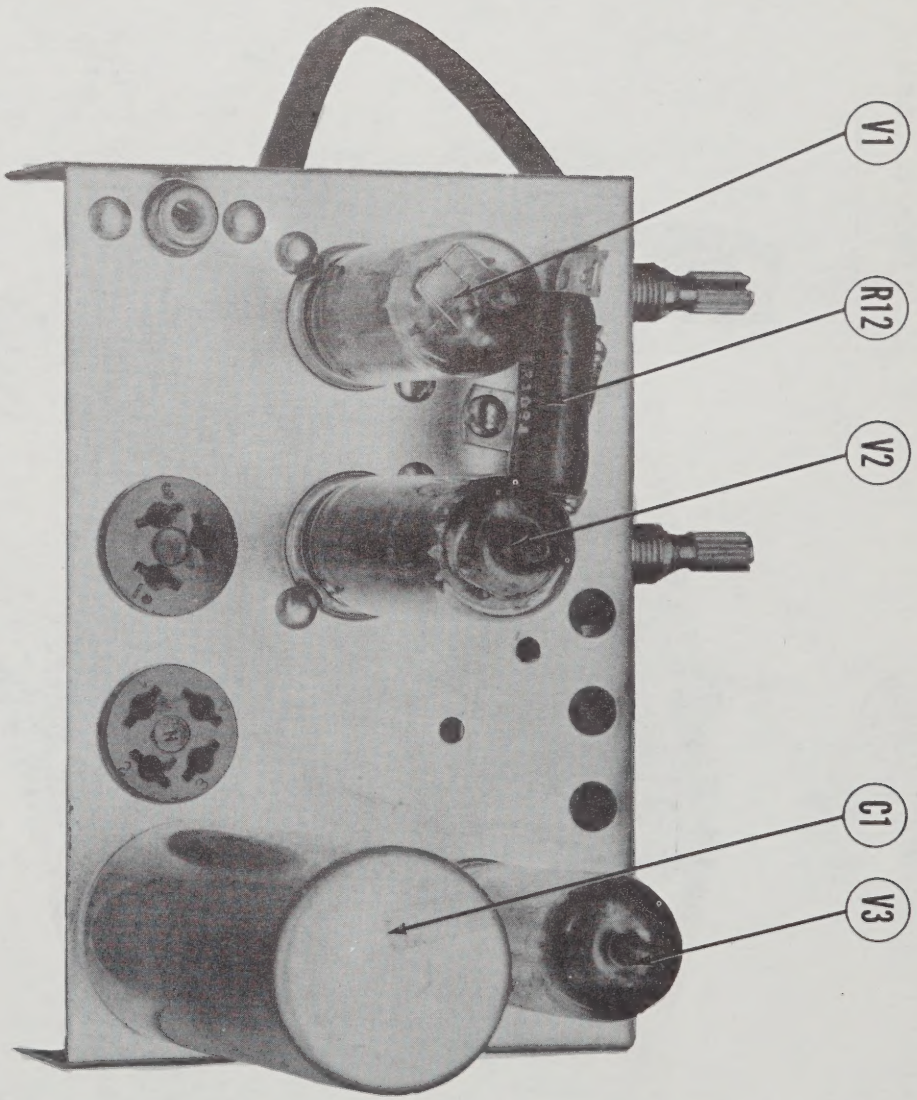
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	403	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A Per Instructions
R2A	500KΩ		401	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft	½	Not req.	Not req.	KSS-3	Not req.	Attach to R2A Per Instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R2A Per Instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
R3	500KΩ	½		BTS-470K	Series Phono
R4	5Meg	½	*	BTS-5Meg	Phono Pre-Amp. Grid
R5	100KΩ	½	814 †	BTS-100K	Phono Pre-Amp. Plate
R6	500KΩ	½		BTS-470K	Output Grid
R7	150Ω	½	505	BTS-150	Output Cathode
R8	1Meg	½	516	BTS-1Meg	Feedback Network
R9	1000Ω	½	539	BTS-1000	Filter
R10	270Ω	1	602	BTA-270	Filter
R11	30Ω	½	534		Rectifier Ballast
R12	125Ω	7.5	601	1 3/4A-125	Filament Dropping

* Items R4 and C3 are combined into one unit.
† Items R5 and C5 are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.1Ω	4.4Ω	169Ω	.4Ω		A-3332 ①	A-2928 ①	R0-2 ①	① Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

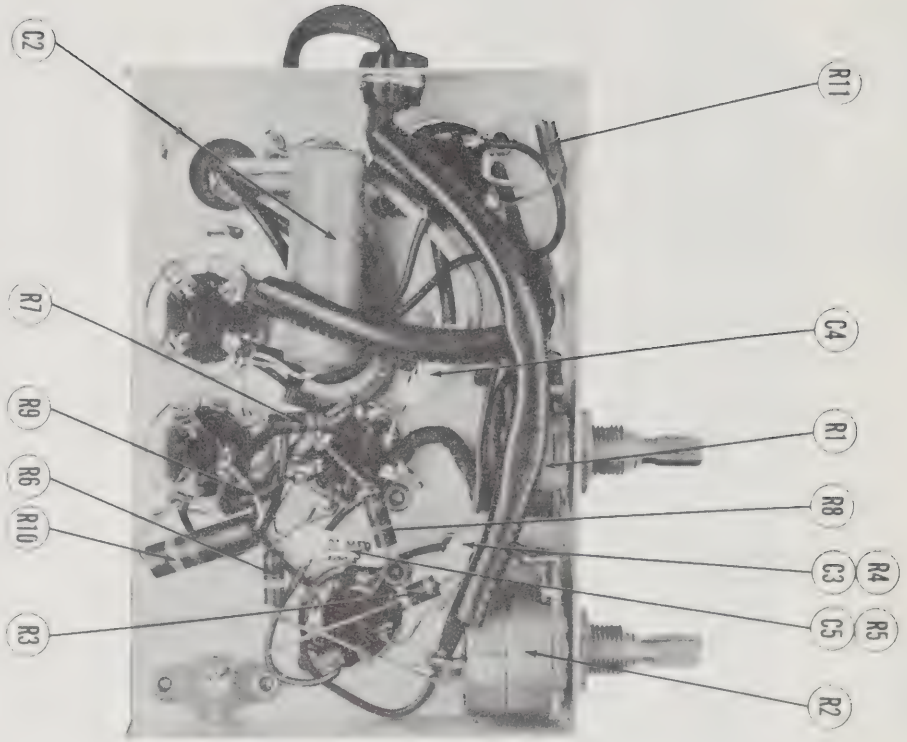
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105		
SP1	PM	4.4Ω	2601	Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 13/16"	9/16"				

PHONO CARTRIDGE and NEEDLE

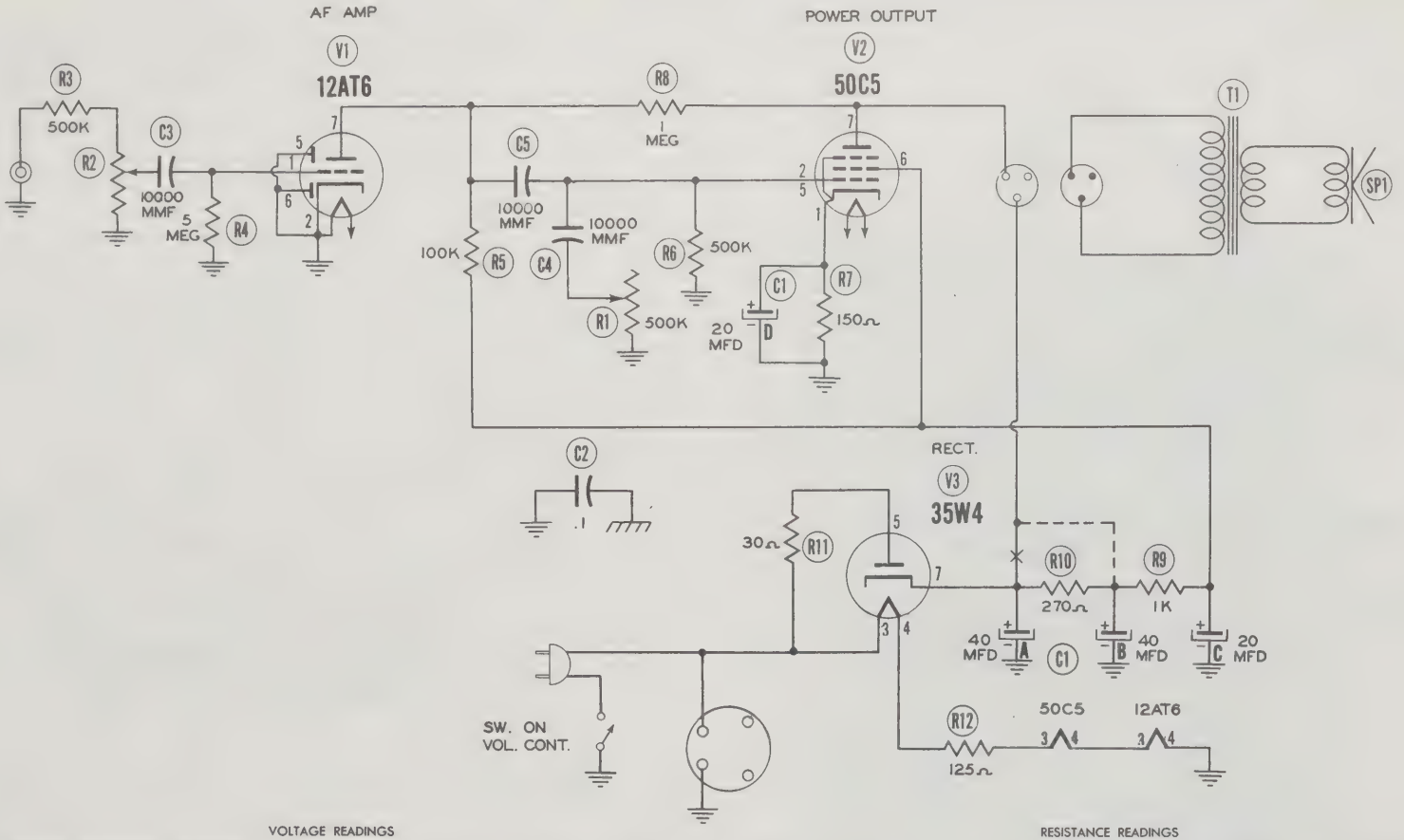
ITEM No.	REPLACEMENT DATA							REMARKS
	AIRCASTLE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	2531	AC-AG-J	A-AG	W26B	A66U	33-B	0-2 Or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 358VM



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AT6	-.6VDC	0V	13VAC	0V	0V	0V	65VDC
V 2	50C5	8.8VDC	0V	65VAC	13VAC	0V	105VDC	110VDC
V 3	35W4	0V	0V	117VAC	80VAC	110VAC	95VAC	115VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AT7	5Meg	0Ω	13Ω	0Ω	0Ω	0Ω	†100KΩ
V 2	50C5	150Ω	500KΩ	65Ω	13Ω	500KΩ	†1.3KΩ	†170Ω
V 3	35W4	Inf.	Inf.	225Ω	190Ω	260Ω	200Ω	45KΩ

† MEASURED FROM PIN 7 OF V 3

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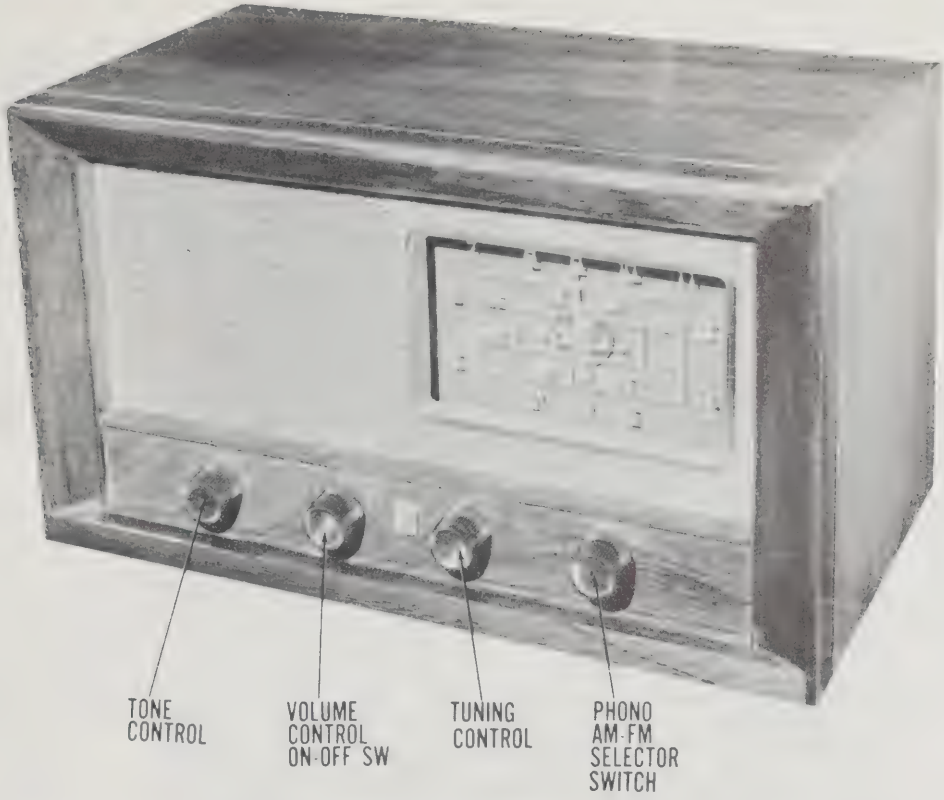
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

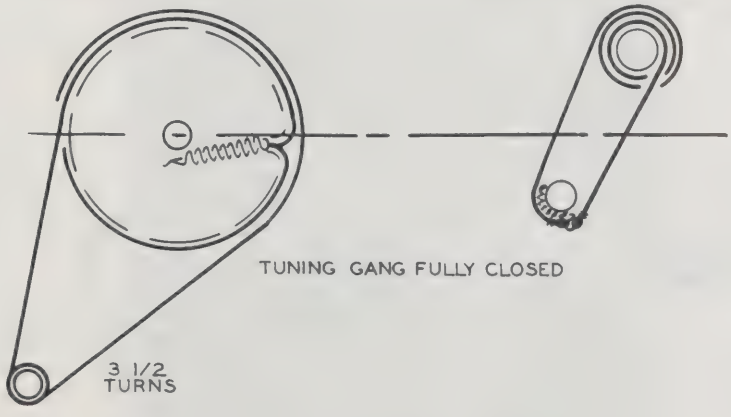
AIRLINE
MODEL 05WG-1813A



AIRLINE
MODEL 05WG-1813A

AIRLINE MODEL 05WG -1813A

TRADE NAME	Airline, Model 05WG-1813A	
SUPPLIER	Montgomery Ward and Co., 619 Chicago Ave., Chicago, Illinois	
TYPE SET	AC Operated AM-FM Superheterodyne Receiver With Loop Antenna	
TUBES (NINE)	Types 6AB4 FM RF Amp., 6AB4 FM Mixer, 6BE6 AM Converter-FM Osc., 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6AV6 Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier	
POWER SUPPLY	105-125 Volts AC	RATING .28 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600	FREQ. MOD. 88-108MC



DIAL CORD DRIVE

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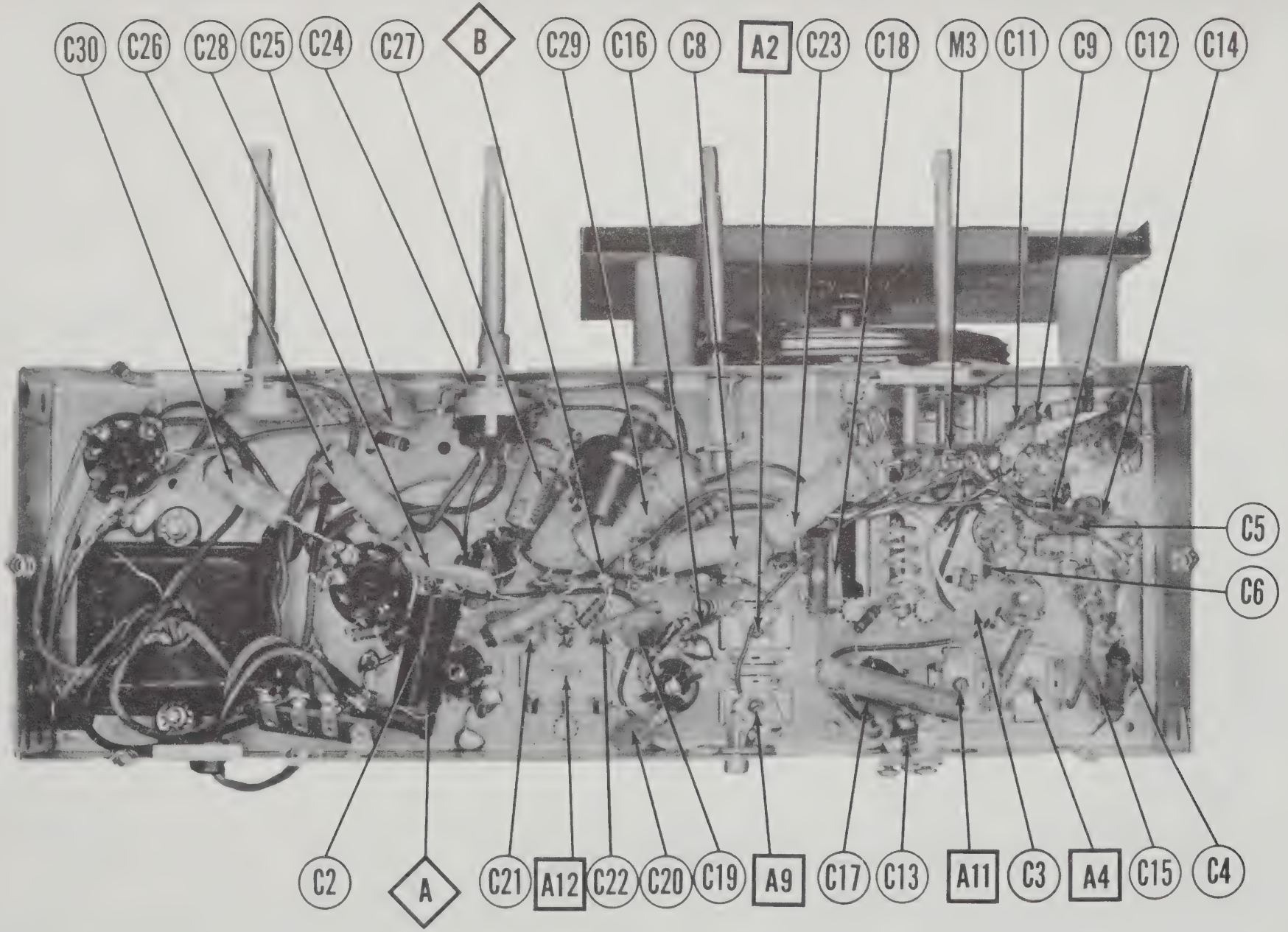
C30
C26
C28
C25
C24
C27
B
C29
C16
C8
A2
C23
C18
M3
C11
C9
C12
C14
C5
C6
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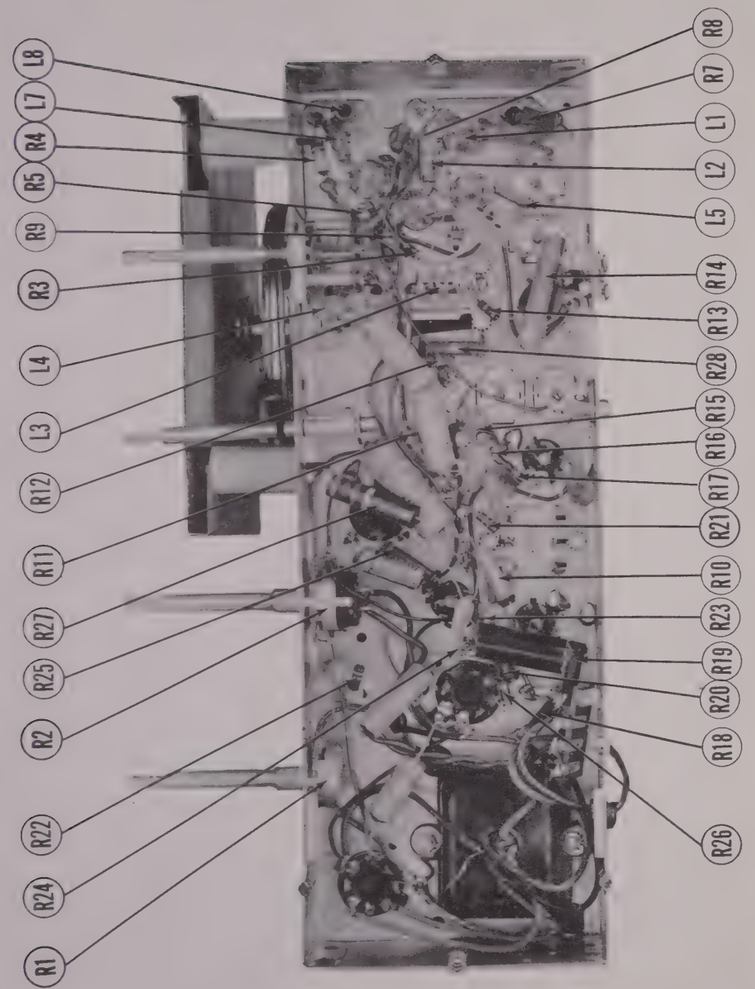
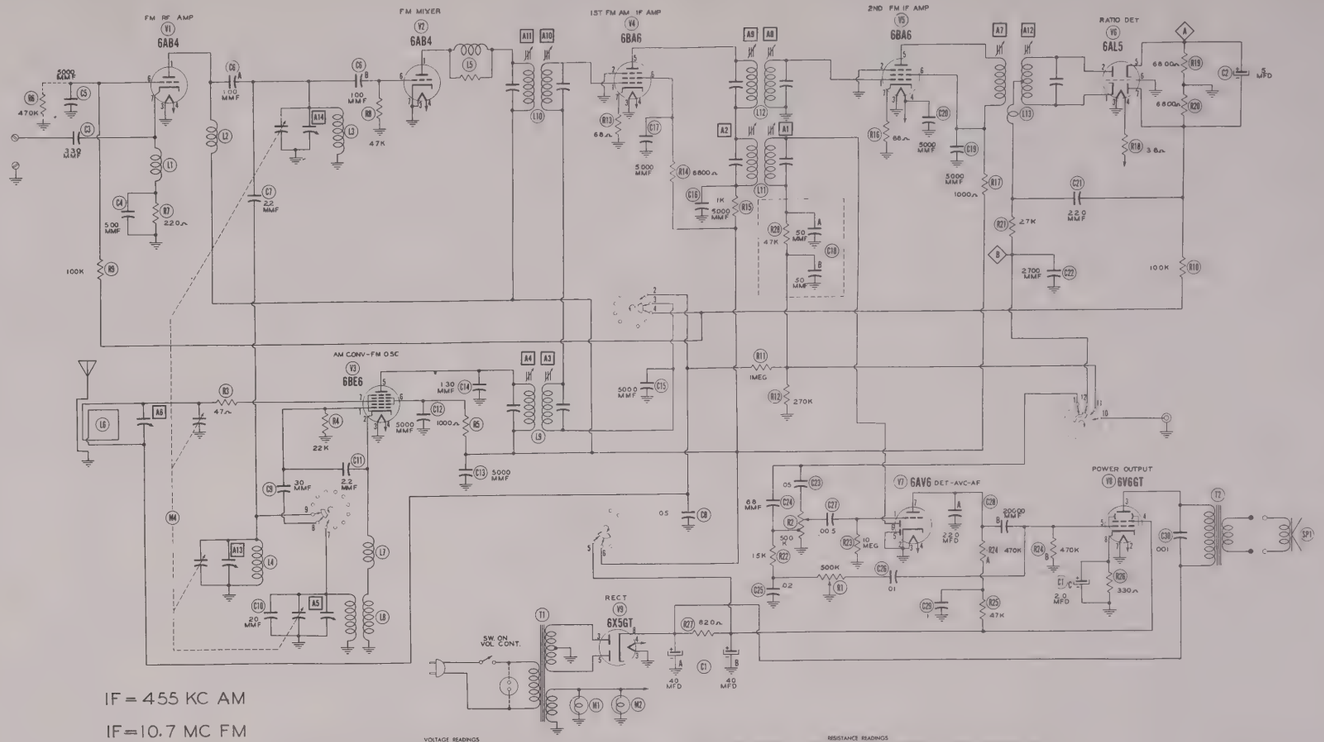
C3
A4
C15
C4





IF = 455 KC AM

IF = 10.7 MC FM

SWITCH SHOWN IN FM POSITION.
SWITCH SEQUENCE:
1. FREQ. MOD.
2. BROADCAST
3. PHONO

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AB4	105VDC	0V	0V	6.3VAC	105VDC	†-.2VDC ▲0V	.8VDC	
V 2	6AB4	105VDC	0V	0V	6.3VAC	106VDC	†-4VDC ▲-.4VDC	0V	
V 3	6BE6	89-5.5VDC Pin 6 .5VDC	0V	0V	6.3VAC	105VDC	100VDC	†-.5VDC ▲-1VDC	
V 4	6BA6	-.1VDC	0V	0V	6.3VAC	95VDC	96VDC	.8VDC	
V 5	6BA6	0V	0V	0V	6.3VAC	85VDC	85VDC	1.1VDC	
V 6	6AL5	8.1VDC	8.1VDC	0V	5VAC	8.1VDC	0V	†-.1VDC	
V 7	6AV6	-.6VDC	0V	0V	6.3VAC	0V	▲-.6VDC	52VDC	
V 8	6V6GT	0V	6.3VAC	165VDC	310VDC	0V	0V	0V	8VDC
V 9	6X5GT	0V	0V	355VAC	0V	355VAC	0V	6.3VAC	350VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

† TAKEN IN FM POSITION
▲ TAKEN IN AM POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AB4	180Ω	0Ω	0Ω	1Ω	180Ω	205KΩ	220Ω	
V 2	6AB4	180Ω	0Ω	0Ω	1Ω	180Ω	470KΩ	0Ω	
V 3	6BE6	22KΩ HOSLEY ±1.3MHz	2.4Ω	0Ω	1Ω	185Ω	11.8KΩ	1.3Meg	
V 4	6BA6	1Ω	0Ω	0Ω	1Ω	11.8KΩ	17.6KΩ	68Ω	
V 5	6BA6	1Ω	0Ω	0Ω	1Ω	11.8KΩ	11.8KΩ	68Ω	
V 6	6AL5	Inf.	Inf.	0Ω	0Ω	6.8KΩ	0Ω	6.8KΩ	
V 7	6AV6	10Meg	0Ω	0Ω	1Ω	0Ω	220KΩ	1515KΩ	
V 8	6V6GT	Inf.	1Ω	1440Ω	1880Ω	470KΩ	Inf.	0Ω	330Ω
V 9	6X5GT	Inf.	0Ω	1600	Inf.	1600	Inf.	1Ω	55KΩ

† MEASURED FROM PIN 8 OF V 9

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RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be set at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

		SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1	DUMMY ANTENNA: .1MFD	455KC	AM	Thrust gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	"	1620KC	"	"	"	A5	"
3	Loop	1400KC	"	Tune for max. output.	"	A6	Position loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output. Set pointer to 1400 on AM dial scale.
4	"	FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM.					
5	DUMMY ANTENNA: 2200MMF	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6	"	High side to pin 6 (grid) of 6BA6 (V4). Low side to chassis.	455KC (CW)	AM	Thrust gang fully open	DC probe to Point ⑥. Common to chassis.	A10, A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7	"	"	"	"	"	"	"	"
8	DUMMY ANTENNA: 2200MMF	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
9	"	High side to pin 6 (grid) of 6BA6 (V4). Low side to chassis.	455KC (CW)	FM	Thrust gang fully open	DC probe to Point ⑥. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
10	"	"	"	"	"	"	"	"
11	DUMMY ANTENNA: 2200MMF	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
12	"	High side to pin 6 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC (CW)	FM	Tune for max. deflection	DC probe to Point ⑥. Common to chassis.	A12	Disconnect stabilizer capacitor C21. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. Adjust A13 for max. amplitude and straightness of crossover lines.
13	"	"	"	"	"	"	"	"
14	DUMMY ANTENNA: 2200MMF	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
15	"	High side to pin 6 (grid) of 6AU6 (V3). Low side to chassis.	10.7MC SWEP (CW)	FM	Position marker to frequency	Video probe to Point ⑥. Common to chassis.	A13	Disconnect stabilizer capacitor C21. Adjust A13 for max. symmetry as per fig. 1.
16	"	"	"	"	"	"	"	"

Use frequency modulated signal with 60 % modulation and 400KC sweep. Use 180 % sawtooth voltage in scope for horizontal deflection.

FM RF ALIGNMENT USING AM SIGNAL GENERATOR AND SCOPE CONNECTED AS DESCRIBED IN PARAGRAPH 4.

		SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1	DUMMY ANTENNA: 2200MMF	10.7MC (Unmod.)	FM	Thrust gang fully open	DC probe to Point ⑥. Common to chassis.	A12	Adjust for maximum deflection.
2	"	"	"	"	"	"	"
3	Short wire to ungrounded FM antenna terminal.	"	"	"	"	"	"

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6AB4	6AB4	5CE	
V2	FM Mixer	6AB4	6AB4	5CE	
V3	AM Conv. - FM Osc.	6BE6	6BE6	7CH	
V4	1st FM, AM IF Amp.	6BA6	6BA6	7BK	
V5	2nd FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Det.	6AL5	6AL5	6BT	
V7	Det. -AVC-AF	6AV6	6AV6	7BT	
V8	Power Output	6V6GT	6V6GT	7AC	
V9	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	200	45X360	AF88G4D		UP4445C		TVL-4605	▪ Filter
B	40	150							■ Filter
C	20	25							▲ Output Cath.
C2	5	100	45X381	PRS150/5		BR41S		TVA-1402	Stabilizing Cap
C3	330	500	47X470	1468-0003	D6-331	5W5T3	GP2K-330	19C14	RF Coupling
C4	500		47X508	SI500	D6-501	5W5T5	GP2K-500	19C32	FM RF Cath.
C5	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	AVC Filter
C6A	100		76X4	SIL00	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
B	100			SIL00	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C7	2.2		47X557		TCZ-2.2				Osc. Coupling
C8	.05	200	B6850S	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C9	30		47X558	SI30	D6-330	5W5Q3	GP1K-30	19C24	Osc. Grid Cap.
C10	20		47X516	SI20NPO	TCZ-20	5R5Q2	NPOK-20	MS-42	Fixed Trimmer
C11	2.2		47X557		TCZ-2.2				Osc. Feedback
C12	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	Osc. Anode Bypass
C13	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	RF Bypass
C14	130		47X559		TCN-130		N75QL-130		Fixed Trimmer
C15	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	AVC Filter
C16	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	1st IF Plate Dec.
C17	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	1st IF Screen
C18A	50		47X512	SI50	D6-500	5W5Q5	GP1K-50	19C28	Diode RF Filter
B	50			SI50	D6-500	5W5Q5	GP1K-50	19C28	Diode RF Filter
C19	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	2nd IF Dec.
C20	5000		47X507	BPD-005	DD-502	1D5D5	81L-005	29C1	2nd IF Fil.
C21	220	500	47X488	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	Diode Load Cap
C22	2700		47X492	SI2700	D6-272	1W5D25	GP2M-0027	1FM-225	De-emphasis
C23	.05	200	B6850S	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C24	68	500	47X4T1	1468-000075	D6-680	5W5Q7	GP1K-68	MS-47	Tone Comp.
C25	.02	200	B6820S	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp. *
C26	.01	200	B6810S	P488-01	D6-103	PTE4S1	821-01	1TM-S1	Tone Comp.
C27	.005	400	D6850Z	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C28A	220		47X468	SI220	PC-80 †	5W5T25	GP2K-220	19C19	AF Amp. Plate
B	20000		D6820S	PTE4S2		PTE4S2		4TM-S2	Audio Coupling
C29	.1	400	D6810A	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Dec.
C30	.001	800	B6610Z	P1088-001		PTE16D1		MB-D1	Output Plate

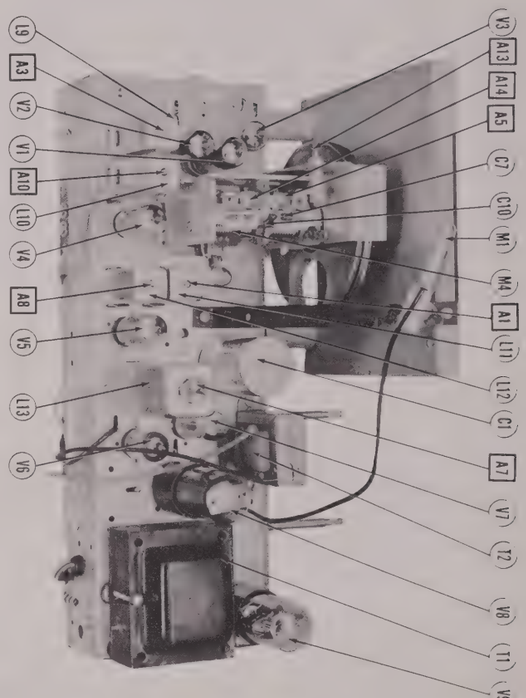
* Some models use .01MFD in this application.
† Items C28A, C28B, R24A and R24B are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	40X312	Q13-133	AG-60-Z	AN-60	Tone Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R1A Per Instructions
R2A	500KΩ	½	36X385	Q13-133X	AK-80	BT5K-66-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R2A Per Instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R2A Per Instructions

SET 127
FOLDER 4

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	47Ω	½	B85470		Parasitic Suppressor
R4	22KΩ	½	B85223		AM Osc. Grid
R5	1000Ω	½	B85102	BTS-1000	AM Osc. Anode
R6	470KΩ	½	B85474		FM RF Amp. Grid - See Note 1
R7	220Ω	½	B85224	BTS-220	FM RF Amp. Cathode
R8	470KΩ	½	B85474		FM Converter Grid
R9	100KΩ	½	B85104	BTS-100K	AVC Network
R10	100KΩ	½	B85104	BTS-100K	AVC Network
R11	1Meg	½	B85105	BTS-1Meg	AVC Network
R12	270KΩ	½	B85274	BTS-270K	AVC Network
R13	68Ω	2	B85680		1st IF Amp. Cathode
R14	6800Ω	2	B85682	BTA-6800	1st IF Amp. Screen
R15	1000Ω	½	B85102	BTS-1000	1st IF Amp. Plate Decoup
R16	68Ω	½	B84680		2nd FM IF Amp. Cathode
R17	1000Ω	½	B85102	BTS-1000	2nd FM IF Amp. Dec.
R18	3.6Ω	1	43X233	BW-½-3.6	Ratio Det. Filament - Wire Wound
R19	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R20	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R21	27KΩ	½	B85273	BTS-27K	De-emphasis
R22	15KΩ	½	B84153	BTS-15K	Tone Compensation
R23	10Meg	½	B84106	BTS-10Meg	AF Amp. Grid
R24A	470KΩ	½	†	BTS-470K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R25	47KΩ	½	B85473	BTS-47K	AF Amp. Plate Decoupling
R26	330Ω	1	B85331	BTS-330	Output Cathode - See Note 2
R27	820Ω	2	D6821	BTS-820	Filter
R28	47KΩ	½	B85473	BTS-47K	Diode Filter

† Items R24A, R24B, C28A and C28B are combined into one unit in some sets. See C28 for parts listing.
Note 1. Not used in all models.
Note 2. Some models use 270Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .280	280VCT @ .033ADC	6.3V @ 3A		53X391	PM-8419 ①	P-3047 ① ②	PH-70 ②

① Add series resistor to reduce plate voltage.
② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	6.5KΩ	4.4Ω	440Ω	.7Ω	51X152	A-3877 ②	A-2930	R0-9 ②	② Drill new mtg. holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	4.4Ω	12A498	ST-108 Mod. P8-X	6A1	
	CONE DIA.	V. C. DIA				
SP2	5 7/8"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L1	FM Ant. Coil	.2Ω		35A9		CLA	.47 Microhenry
L2	RF Choke	3Ω		35A8		CLA	3.3Microhenries
L3	FM RF Coil	0Ω		9A2066			
L4	FM Osc. Coil	0Ω		9A2067			
L5	Parasitic Suppressor	0Ω		9A2103			
L6	Loop Ant.	.1Ω	1.4Ω	9A2182			Includes Cabinet Back And Trimmer
L7	Cath. Choke	1.8Ω		35A5		CLA	2.2Microhenries
L8	AM Osc. Coil	.4Ω	5.2Ω	9A2065		14-1073	
L9	1st AM IF	15Ω	15Ω	9A2062		16-6758	
L10	1st FM IF	1Ω	1Ω	9A2060		16-3487	
L11	2nd AM IF	13Ω	14Ω	9A2063		16-6758	
L12	2nd FM IF	1Ω	1Ω	9A2061		16-3487	
L13	Ratio Det. Trans	1.2Ω	.1Ω	9A2161			

DIAL LIGHTS

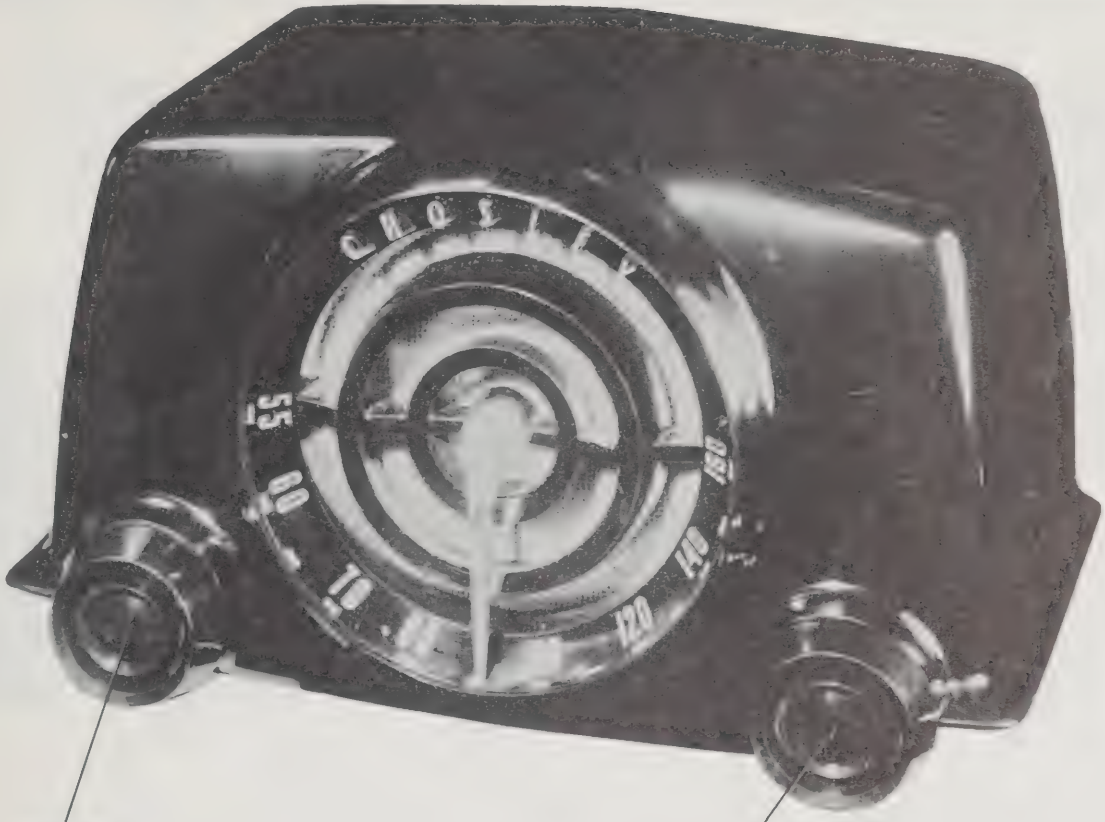
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRLINE PART No.	NOTES
M1	Bayonet	6-8	.15	Brown	7A103	Type # 47
M2	Bayonet	6-8	.15	Brown	7A103	Type # 47(Not used in all sets)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Switch	2A394	Function
M4	2 Gang Var. Cap.	14A212	(28-455MMF, 29-202MMF)
A6	Trimmer	17A256	BC Osc. Adj.
	Knob	10A757	
	Dial Glass	58X745	
	Dial Pointer	15X253	

CROSLEY MODELS 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U

CROSLEY MODELS 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U



CROSLEY MODELS 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U

CROSLEY MODEL 11-104U

TRADE NAME	Crosley, Models 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U (Ch. 301)
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer parallel with base of dial.
Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CROSLEY
MODEL 11-100U

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CROSLEY PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det. -AVC-AF	12AV6	12AV6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	100	150	B-148357	AF101010D		UP84215		TVL-3442	■ Filter
B	30	150							▲ Filter
C2	.1	200	39001-19	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C3	39		C-137727-109	SI39	D6-390	5W5Q4	GP1K-39	1FM-44	Osc. Grid Cap
C4A	200		C-144675-1	SI200	D6-201	5W5T2	GP2K-200		Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	801-002	34C3	Audio Coupling
C	200			SI200	D6-201	5W5T2	GP2K-200		AF Amp. Plate
D	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling
C5	.0005	600	39001-5	1468-0005	D6-501	5W5T5	GP2K-500	6TM-T5	Tone Comp.
C6	.005	600	39001-11	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C7	.01	400	39001-13	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Output Plate
C8	.08	200	39001-85	P288-1	DF-104	PTE4P1		72P52	Line Isolation
C9	.05	400	39001-17	P488-05	DF-503	PTE4S5		4TM-S5	Rect. Plate Byp.

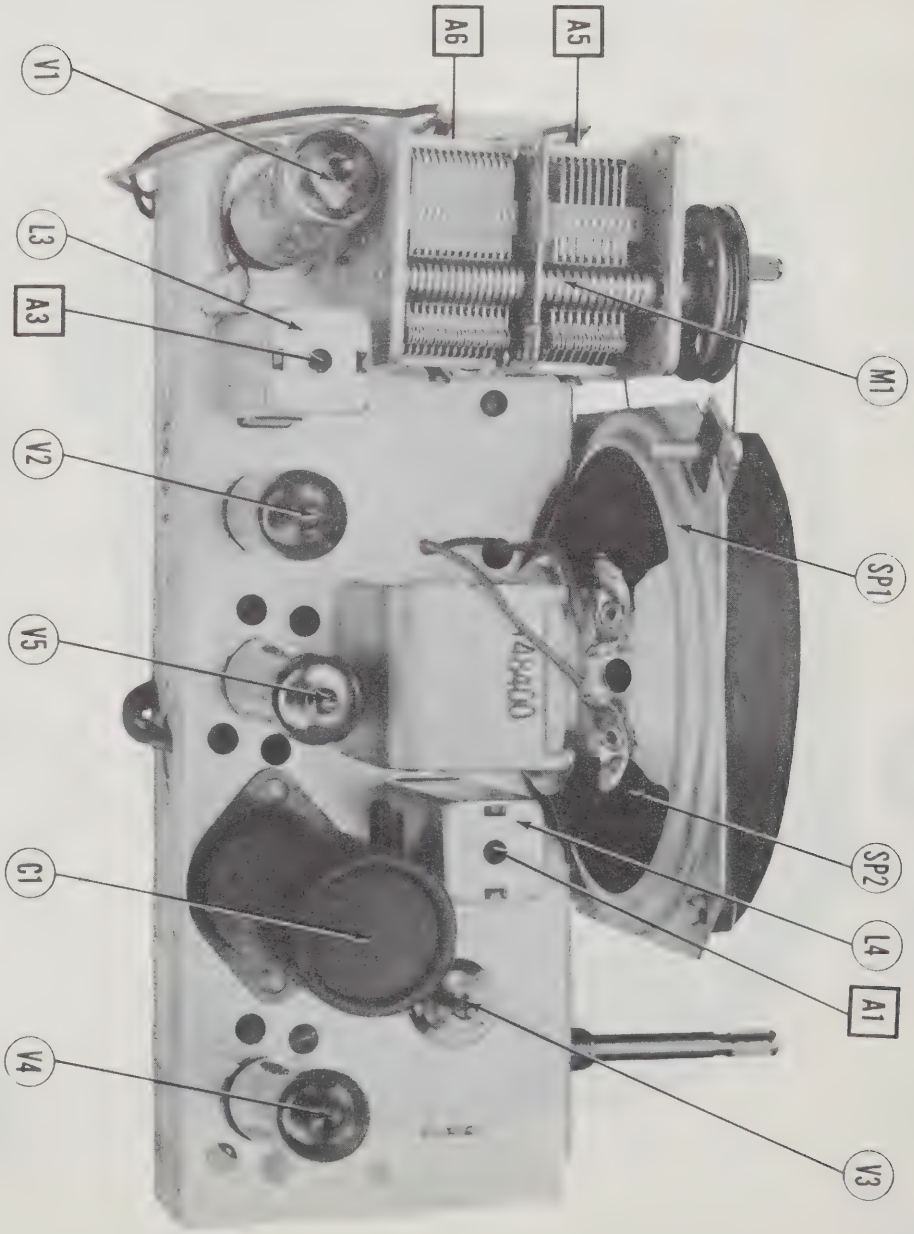
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	3Meg	½	B-148327				Volume Control And SW - Tapped@ 300KΩ

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	
R2	22KΩ	½	39373-60		Osc. Grid
R3	2.2Meg	½	39373-97	BTS-2.2Meg	AVC Network
R4	100KΩ	½	39373-74	BTS-100K	AVC Network
R5	680KΩ	½	39373-90	BTS-680K	Tone Compensation
R6	47KΩ	½	39373-67	BTS-47K	Tone Compensation
R7	10Meg	½	39373-107	BTS-10Meg	AF Amp. Grid
R8	470KΩ	½	39373-87	BTS-470K	AF Amp. Plate
R9	470KΩ	½	39373-87	BTS-470K	Output Grid
R10	150Ω	½	39373-16	BTS-150	Output Cathode
R11	10Ω	½	39373-1	BW-½-10	Voice Coil Shunt
R12	1200Ω	1	39374-114	BTA-1200	Filter
R13	47Ω	1	39374-97		Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.6KΩ	4.5Ω	365Ω	.6Ω	138131-1	A-3876	A-3025①	R0-302 ①	① New mounting hole.

SPEAKER

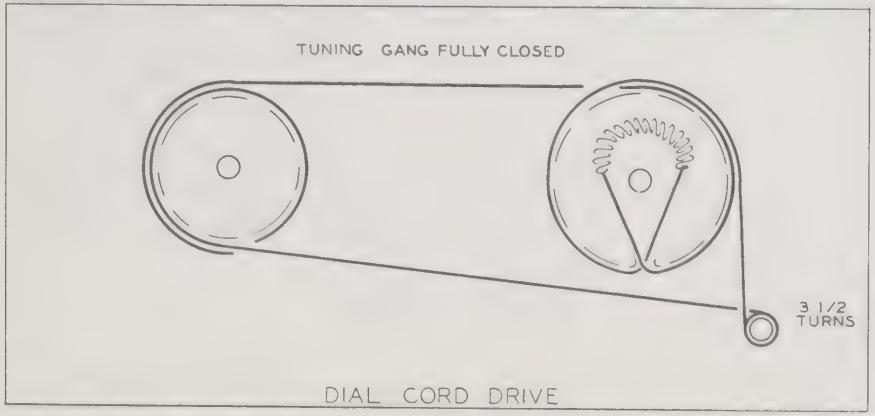
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-113		
SP1	PM	4.5Ω	AD-148400	Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA				
SP2	4"	9/16"				

R F COILS

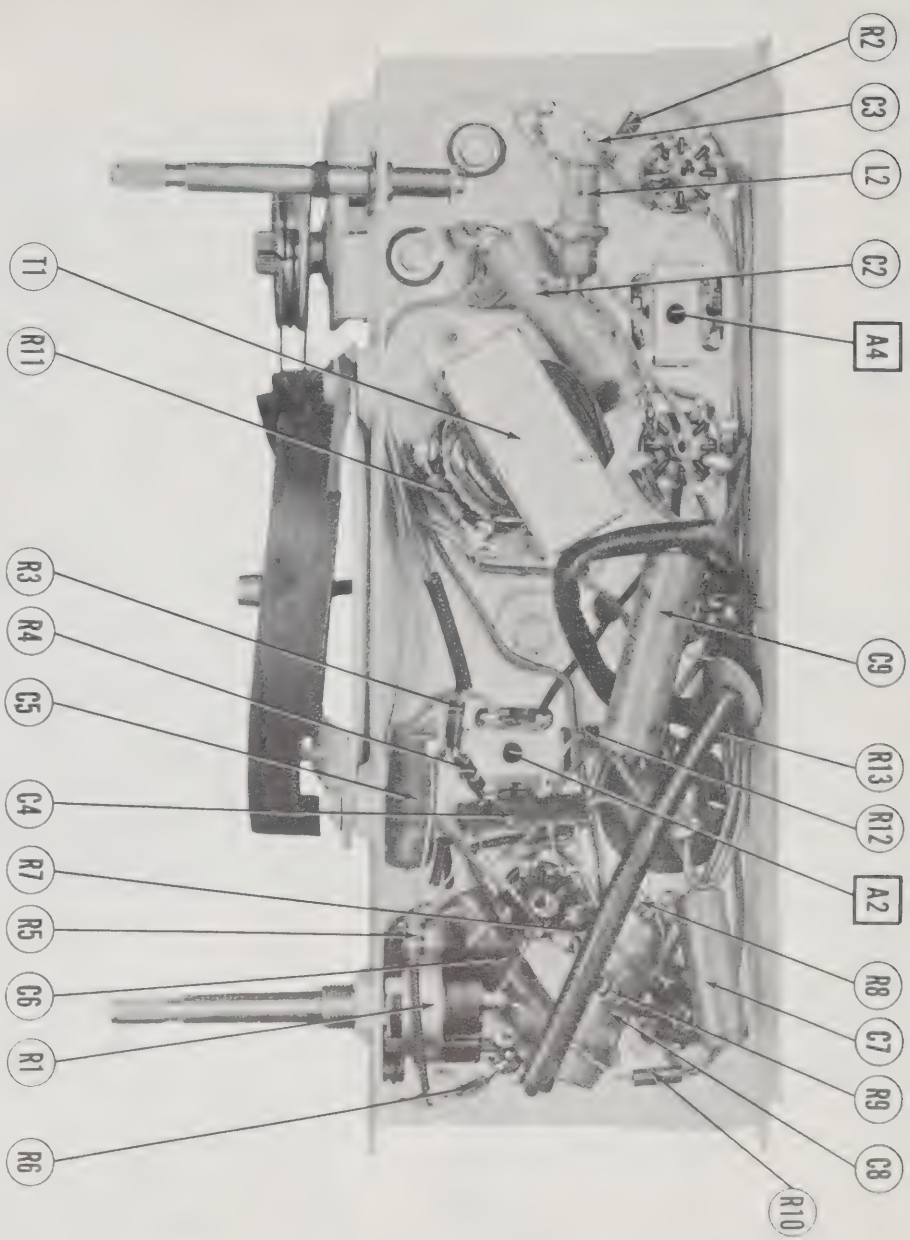
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	
L1	Loop Antenna	3Ω		C-148399		Includes Cabinet Back
L2	Osc. Coil	.9Ω	9.8Ω	AW-148259		
L3	1st IF	20Ω	19Ω	C-139919-5		
L4	2nd IF	20Ω	19Ω	C-139919-5		

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M1	2 Gang Var. Cap.	B-148350	(27-462MMF, 18-124MMF)
	Dial Pointer	B-148320	
	Cabinet	AB-148465-1	Model 11-100U
	Cabinet	AB-148465-2	Model 11-101U
	Cabinet	AB-148465-3	Model 11-102U
	Cabinet	AB-148465-4	Model 11-103U
	Cabinet	R-148273-3	Model 11-104U
	Cabinet	AB-148465-6	Model 11-105U



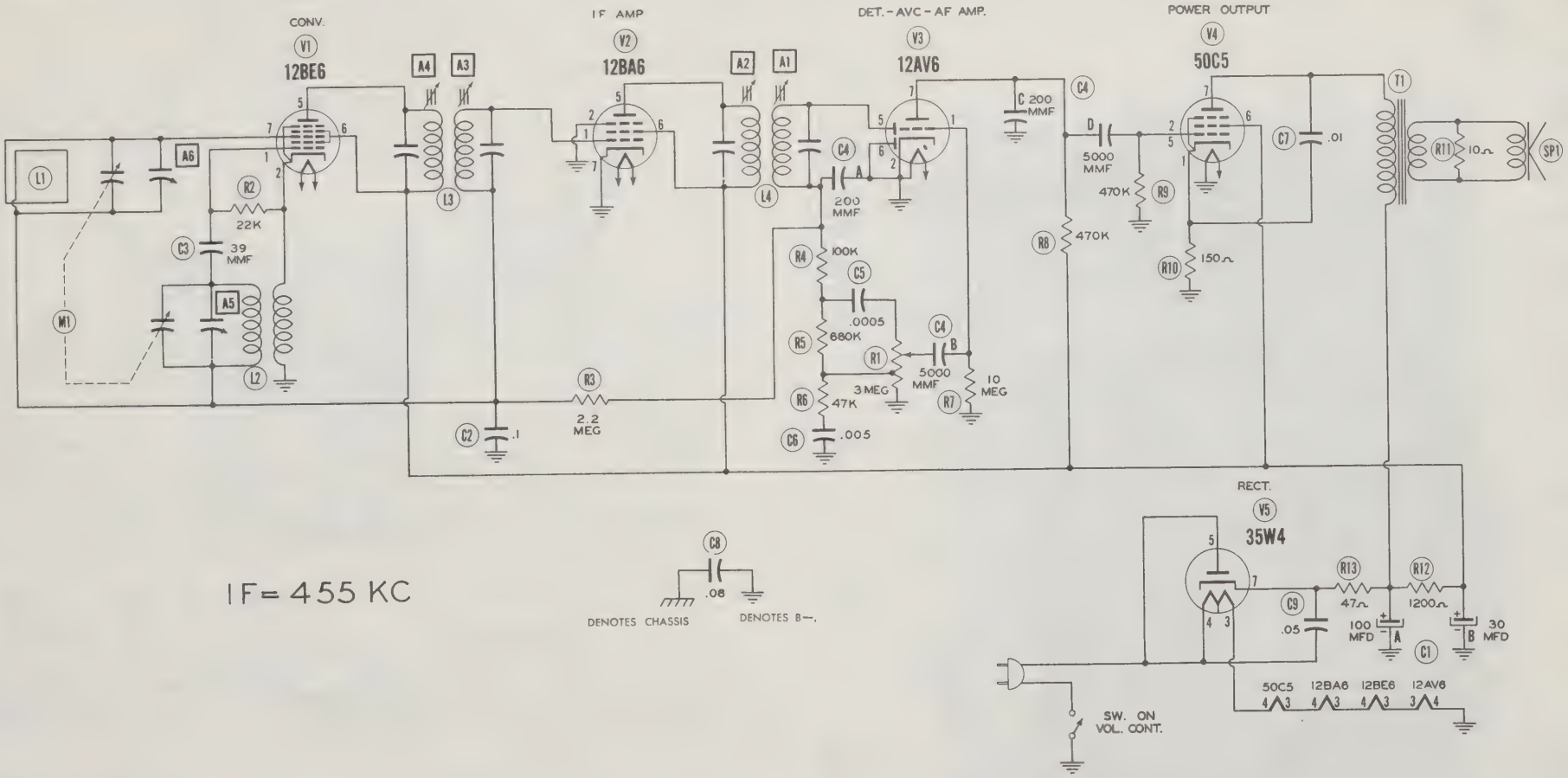
CHASSIS—BOTTOM VIEW



SET 127 FOLDER 5

CROSLEY MODEL 11-100U

CROSLEY MODEL 11-100U



IF = 455 KC

DENOTES CHASSIS

DENOTES B—.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-5.7VDC	0V	12VAC	24VAC	85VDC	85VDC	-.3VDC
V 2	12BA6	-.3VDC	0V	24VAC	35VAC	85VDC	85VDC	0V
V 3	12AV6	-.3VDC	0V	0V	12VAC	-.2VDC	0V	48VDC
V 4	50C5	6VDC	0V	35VAC	82VAC	0V	85VDC	100VDC
V 5	35W4	0V	0V	82VAC	117VAC	117VAC	105VAC	110VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.9Ω	13Ω	26Ω	†1.2KΩ	†1.2KΩ	3.3Meg
V 2	12BA6	3.3Meg	0Ω	26Ω	38Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AV6	10Meg	0Ω	0Ω	13Ω	1.1Meg	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	38Ω	90Ω	470KΩ	†1.2KΩ	†410Ω
V 5	35W4	Inf.	Inf.	90Ω	130Ω	130Ω	120Ω	100KΩ

† MEASURED FROM PIN 7 OF V 5

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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127-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

HOFFMAN MODELS
950, A, 951, A, 952, A, 960, 961, 962
(CH. 172, 174, 176)

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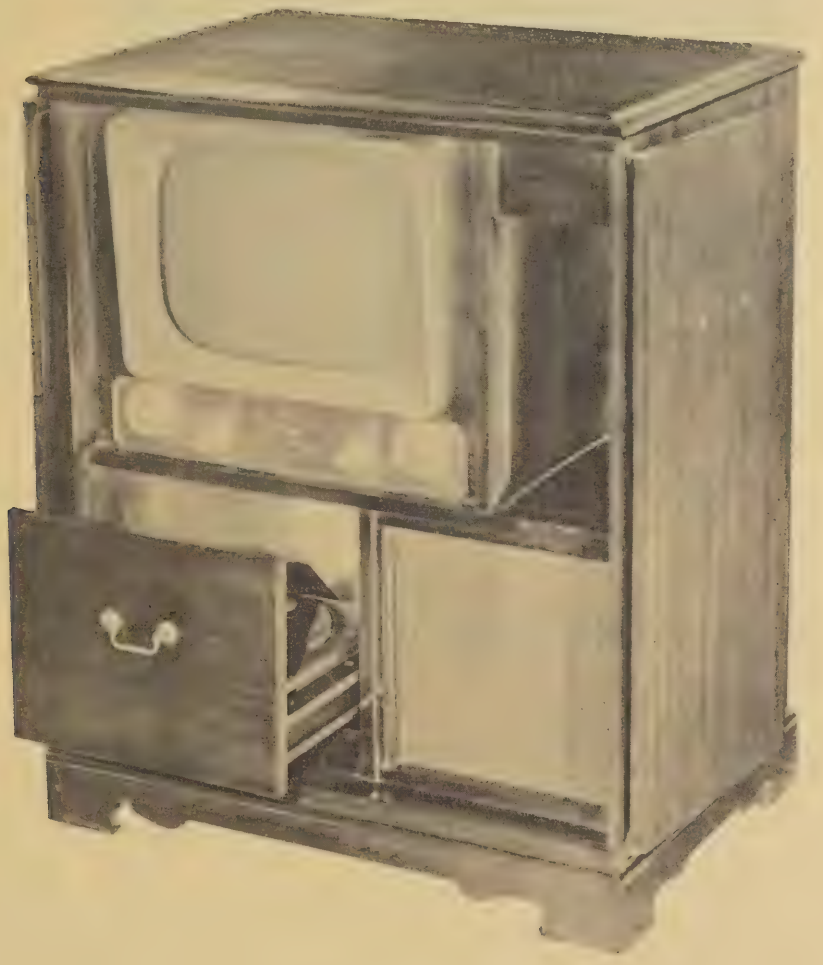

MODEL 951

HOFFMAN MODELS
950, A, 951, A, 952, A, 960, 961, 962
(CH. 172, 174, 176)

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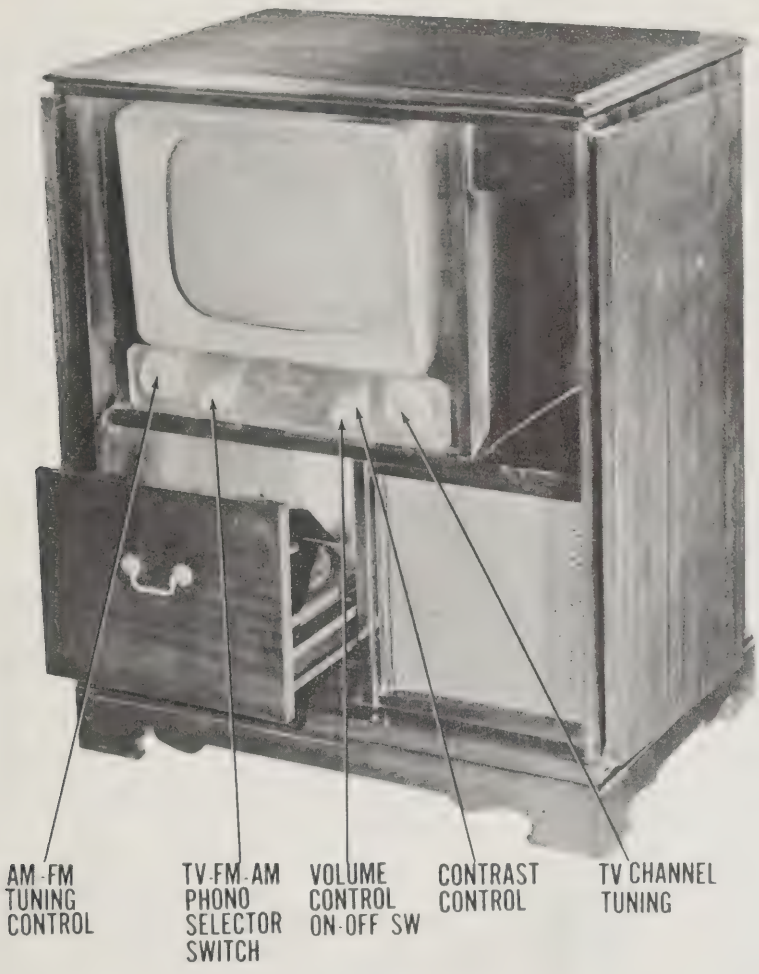
Date 3/51 Set No. 127—Folder No. 6

HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962



HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962

HOFFMAN MODEL 951

TRADE NAME	Hoffman, Models 950, 951, 952 (Ch. 172), 950A, 951A, 952A (Ch. 174) 960, 961, 962, (Ch. 176)
MANUFACTURER	Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif.
TYPE SET	TV-AM-FM-Phono Combination Receiver
TUBES	Twenty Four (Ch. 172 and 174) Twenty Seven (Ch. 176)
POWER SUPPLY	110-120 Volts AC - Cycle
TUNING RANGE	(TV) Channels 2 thru 13 (AM) 535-1650 KC (FM) 88-108 MC
RATINGS	2.1 Amp. @ 117 Volts AC (TV) 1.75 Amp. @ 117 Volts AC (Radio)

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RECORD CHANGER UNIT - WEBSTER MODEL NO. 100

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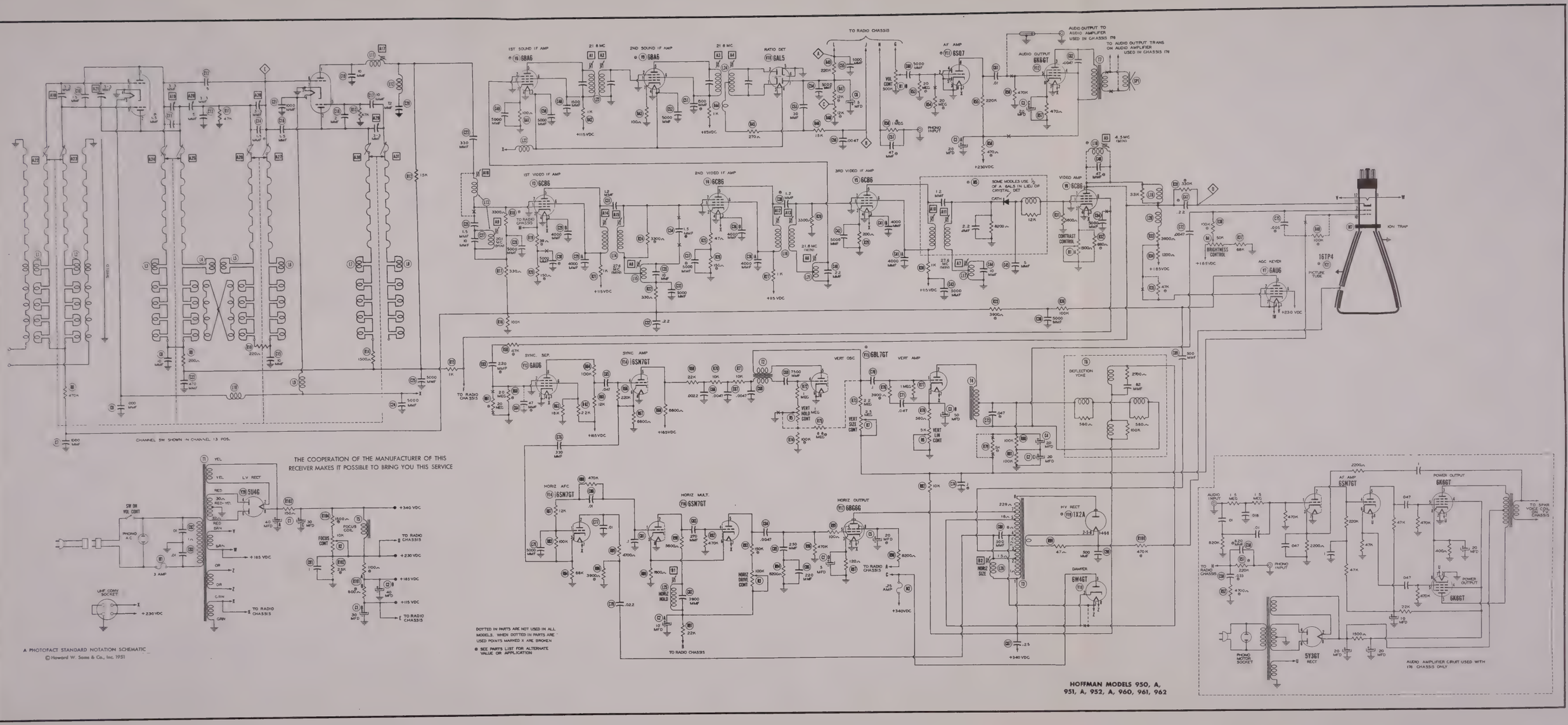
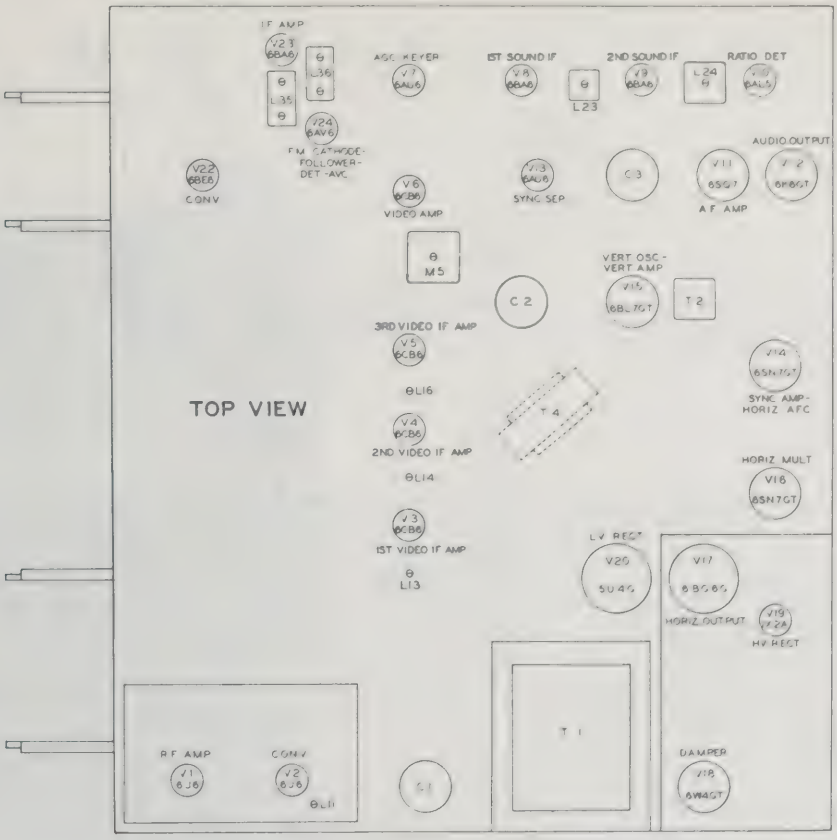
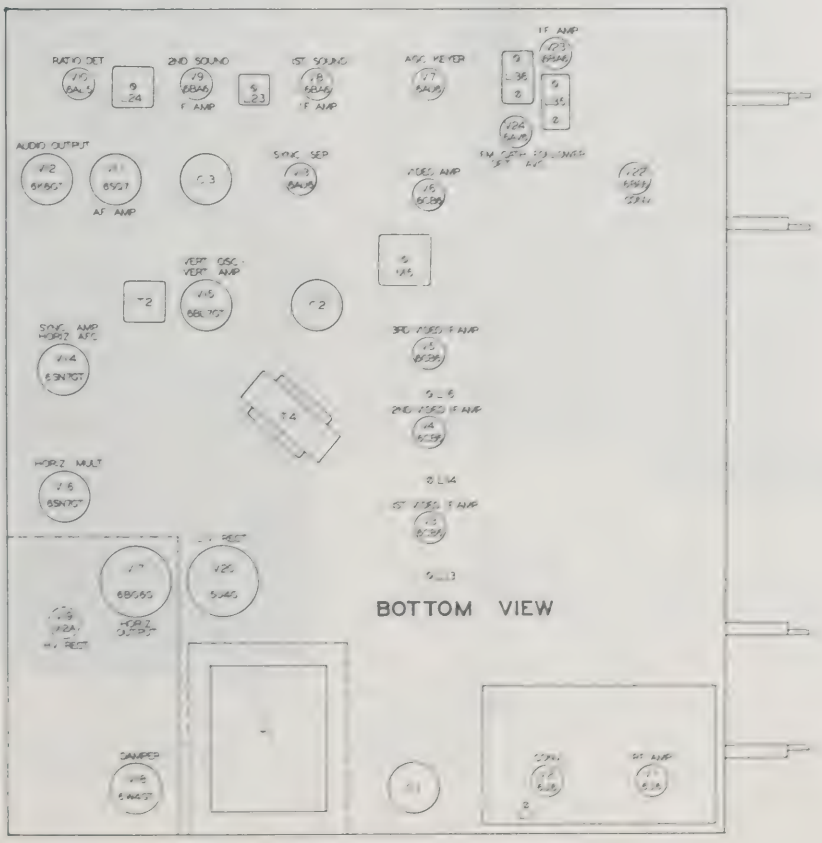


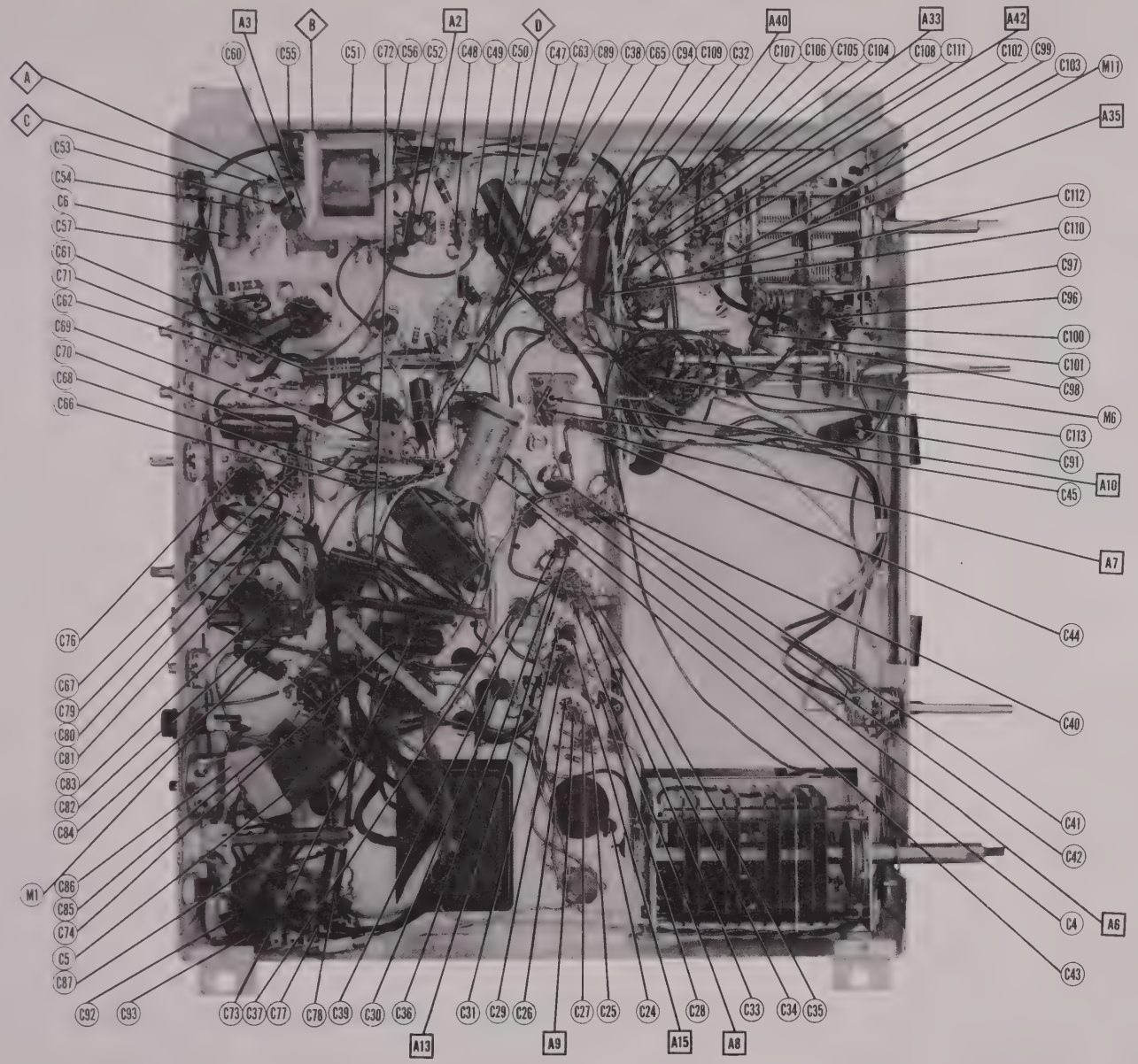
HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962

HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962

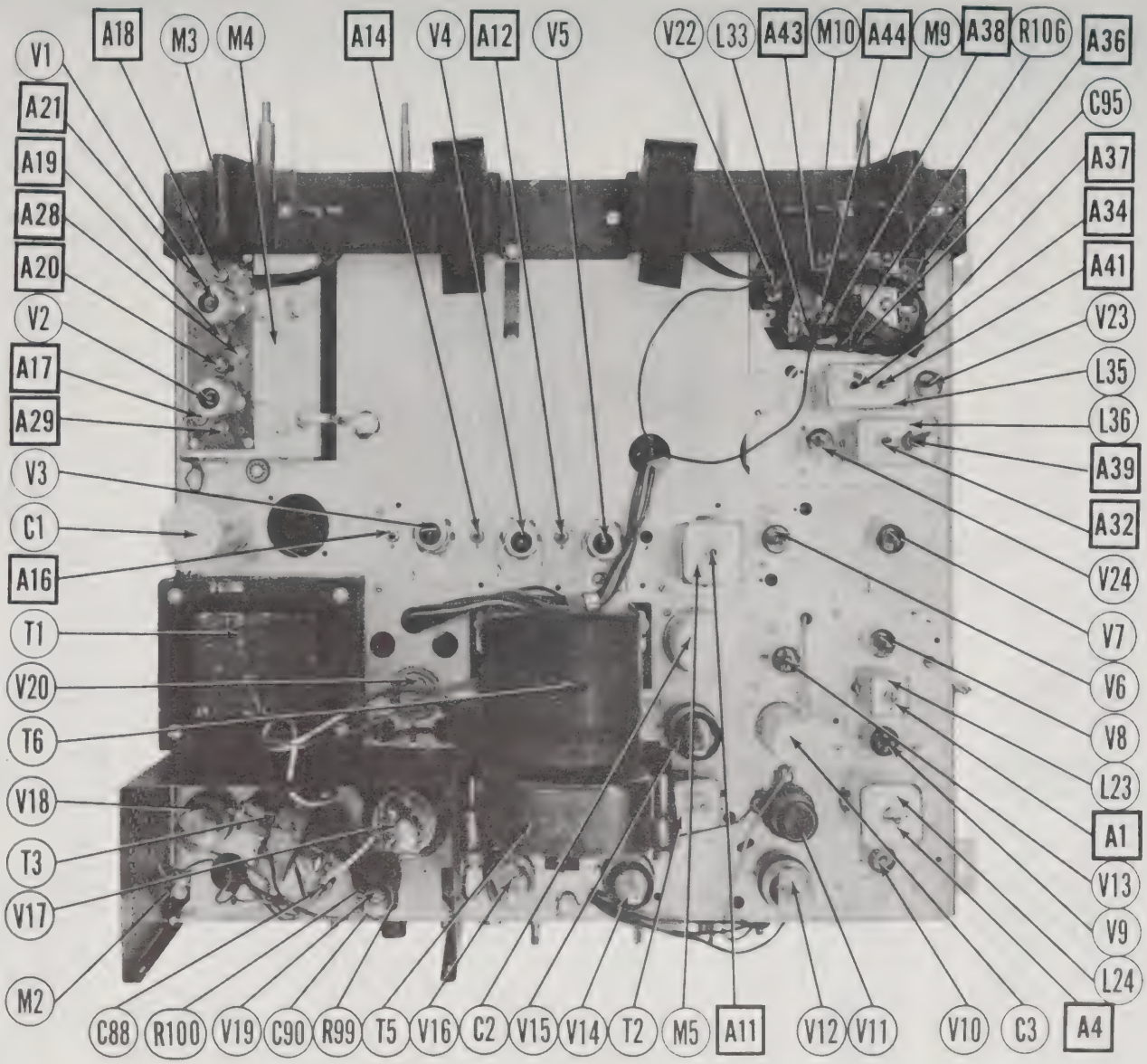




TUBE PLACEMENT CHART



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW

HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V16) from its socket.

Turn the function selector to "TV" (maximum CCW).

Remove the converter tube (V2) and replace it with a 6J6 which has pin 2 removed. This will prevent the possibility of erroneous indications caused by the local oscillator.

Connect the negative lead of a 3 volt battery to the junction of R23 and C38, connect the positive lead to chassis.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6BA6 (V8). Low side to chassis.	21.6MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to Point (B). Common to Point (C).	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6BA6 (V8). Low side to chassis.	21.6MC (450KC SWP)	21.6MC	Any	Vert. amp. to Point (A). Low side to chassis.	A1, A2, A3	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
2.	"	"	"	"	"	Vert. amp. to Point (B). Low side to chassis.	A4	Reconnect capacitor C6. Adjust A4 so 21.6MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A3 for maximum amplitude and straightness of crossover lines.

TRAP ADJUSTMENTS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005MFD	High side to pin 1 (grid) of 6CB6 (V6). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (fig. 1) to pin 11 (cath.) of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.
4.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	21.6MC	"	DC probe to Point (D). Common to chassis.	A6	"
5.	"	"	27.6MC	"	"	A7, A8	Detune each coil by placing finger on the windings while adjusting the other coil for MINIMUM deflection.
6.	"	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	20.1MC	"	"	A9	Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

During each step of video IF alignment, short the primary of the transformer feeding the tube to which the signal generator is connected.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.005MFD	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	24.25MC (10MC SWP)	24.25MC	Any	Vert. amp. to Point (D). Low side to chassis.	A10, A 11	Adjust for maximum amplitude and symmetry as per figure 4.
8.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	"	"	"	"	A12, A13	"
9.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	"	"	"	"	A14, A15	"
10.	"	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	"	21.6MC 26.1MC	"	"	A16, A17	Adjust for response curve similar to figure 5. If necessary SLIGHTLY retouch A10 thru A15 for proper response.

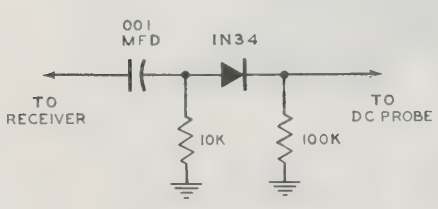


FIG. 1

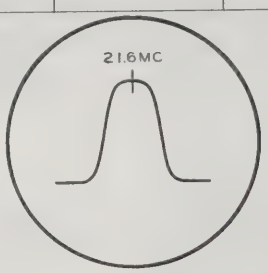


FIG. 2

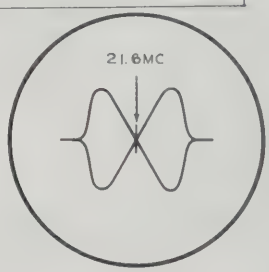


FIG. 3

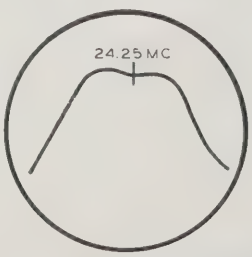


FIG.4

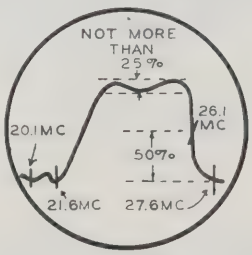


FIG.5

TV ALIGNMENT INSTRUCTIONS (CONT.)

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Remove the 3 volt bias battery used previously and connect the negative lead of a 1 1/2 volt battery to the junction of R16 and R17, connect the positive lead to chassis. Fasten a piece of wire to the chassis to use as an index, the index end of the wire should be centered over the tuning shaft.
Replace the tuning knobs.

RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	Vert. amp. thru 100KΩ to Point E, (screw of A19). Low side to chassis.	A18, A19, A20	Adjust for response curve similar to fig. 6.
12.	"	"	"	"	"	"	A21	Adjust for proper neutralization. Extreme cases of improper neutralizing will cause the RF amplifier to oscillate, which will appear as "grass" on the scope. Lesser degrees of improper neutralizing will appear as a peak on one or the other sides of the response curve. See figures 7 and 7A for examples of improper neutralizing.
13.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	A22, A23, A24, A25, A26, A27	Adjust the high band loop slide bars for max. amplitude and symmetry as per figure 6. Both sliders of any one section should be maintained at approximately the same position.
14.	"	"	"	"	"	"	A28	Adjust for proper band width of response curve.
15.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"	A18, A19, A20	Adjust for maximum amplitude and symmetry of response curve. If necessary retouch A28 for proper bandwidth. Recheck channel 13. For best results it is recommended that steps 13, 14, and 15 be repeated.
16.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	L1, L2, L3, L4, L5, L6	Check to see if proper response curve can be obtained with the slide contacts within the center 1/3 of the channel segment on the printed lines. If not set dial exactly to channel 6 and expand or compress the turns of the "jump" coils for proper response. The order of adjustment should be L1, L2, L3, L6, L4, L5. L4 and L5 are coupling coils and should be adjusted for proper band width.
17.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"		Check to see if the response curve is within the limits shown in figure 8. If not, make slight compromise adjustments of A18 and A21. Recheck ALL channels for response within the limits in figure 8. If necessary make compromise adjustments which will result in all channel falling within the limits of figure 8.

OSCILLATOR ALIGNMENT

Two marker generators are required to align the oscillator in this tuner. The second marker is set to the video IF frequency, (26.1MC) and is fed through an isolation network to point E, (screw on A19). The isolation network consists of a 220MMF capacitor in series with a 1000Ω or larger value, use the largest value of resistance which will allow a minimum usable indication. The frequency of the first marker generator, (usually built into the sweep generator), will be indicated by an asterisk (*) in the table. The second marker generator frequency (26.1MC) will be indicated by a dagger (†).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	* 83.25MC † 26.1MC	6	Vert. amp. thru 100KΩ to Point E, (screw of A19). Low side to chassis.	A29	Adjust A29 until markers coincide.
19.	"	"	213MC	* 211.25MC † 26.1MC	13	"	A30, A31	Adjust sliders until markers coincide. The sliders should be maintained at approximately the same realtive position.
20.	"	"	85MC (10MC SWP)	* 83.25MC † 26.1MC	6	"	L7, L8	Expand or compress coil turns until markers coincide.
21.	"	"	57MC (10MC SWP)	*55.25MC † 26.1MC	2	"		Check to see if markers coincide with slider contacts near the center of the channel 2 segment. If not compromise adjustment of the "jump" coils L7 and L8 will be required.

FIG. 6

FIG 7

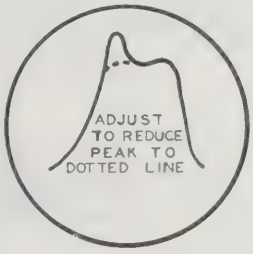


FIG. 7A

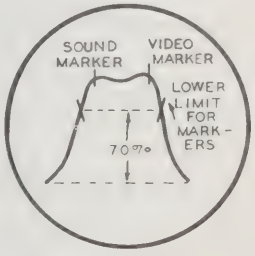


FIG. 8

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

TV alignment should be performed before radio alignment.

AM ALIGNMENT

Turn the junction switch to "AM" position (3rd position clockwise)
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
22.	.1MFD	High side to pin 7 (grid) of 6BE6 (V22). Low side to chassis.	455KC (400∿ Mod.)	AM (Third pos. CW)	Tuning gang fully open.	Across voice coil	A32, A33, A34, A35	Adjust for maximum output.
23.		Loop	1650KC	"	"	"	A36	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
24.		Loop	535KC	"	Tuning gang fully closed	"		If necessary adjust end plates on oscillator section of tuning gang for maximum output. Repeat steps 23 and 24 until oscillator coverage is correct.
25.		Loop	1400KC	"	Tune for max. output.	"	A37	Adjust for maximum output.
26.		Loop	600KC	"	"	"	A38	"
27.		Loop	1000KC	"	"	"		Adjust end plates on RF section of tuning gang for maximum output. Repeat step 25.

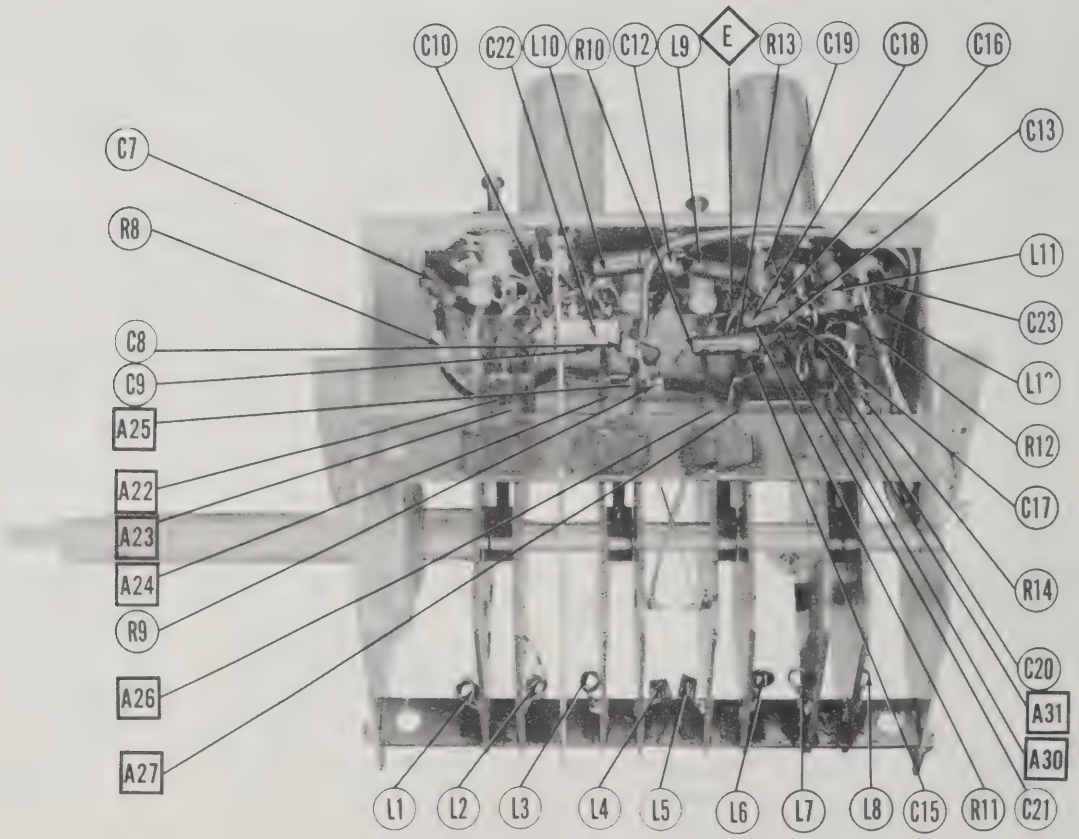
FM IF ALIGNMENT

Turn the function switch to "FM" position (2nd position clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
28.	.005MFD	High side to pin 7 (grid) of 6BE6 (V22). Low side to chassis.	21.6MC (Unmod.)	FM (Second pos. CW)	Tuning gang fully closed.	DC probe to Point (A). Common to chassis.	A39, A40 A41, A42	Adjust for maximum deflection.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
29.	Two 120Ω carbon resistors	Across FM antenna terminals with 120Ω in each lead.	110MC (Unmod.)	FM	Tuning gang fully open	DC probe to Point (A). Common to chassis.	A43	Adjust for maximum deflection
30.	"	"	107MC	"	Tune for max. deflection.	"	A44	"
31.	"	"	90MC	"	"	"		Adjust end plates on FM antenna section of tuning gang. Repeat step 30.



RF TUNER

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	65VDC	65VDC	6.3VAC	0V	-.8VDC	-.8VDC	0V		
V 2	6J6	35VDC	65VDC	0V	6.3VAC	§-2.2VDC	-.3VDC	0V		
V 3	6CB6	-2.8VDC	.2VDC	6.3VAC	0V	115VDC	115VDC	0V		
V 4	6CB6	-2.8VDC	.4VDC	6.3VAC	0V	115VDC	115VDC	0V		
V 5	6CB6	0V	1.4VDC	6.3VAC	0V	115VDC	115VDC	0V		
V 6	6CB6	0V	3VDC	6.3VAC	0V	150VDC	120VDC	0V		
V 7	6AU6	155VDC	165VDC	¶ 165VDC	¶ 165VDC	-4.2VDC	230VDC	165VDC		
V 8	6BA6	0V	0V	6.3VAC	0V	100VDC	100VDC	1.3VDC		
V 9	6BA6	0V	0V	6.3VAC	0V	100VDC	100VDC	1.3VDC		
V 10	6AL5	-.1VDC	-.1VDC	0V	6.3VAC	0V	0V	-.2VDC		
V 11	6SQ7	0V	-.3VDC	0V	0V	0V	105VDC	6.3VAC	0V	
V 12	6K6GT	0V	6.3VAC	210VDC	220VDC	0V	230VDC	0V	15VDC	
V 13	6AU6	-.7VDC	0V	6.3VAC	0V	90VDC	45VDC	0V		
V 14	6SN7GT	-.2VDC	-.1VDC	.4VDC	7.3VDC	120VDC	50VDC	6.3VAC	0V	
V 15	6BL7GT	-1.6VDC 0V	420VDC 310VDC	35VDC 10VDC	-3VDC -9.4VDC	140VDC 35VDC	0V	6.3VAC	0V	
V 16	6SN7GT	0V	205VDC	8.6VDC	-3.2VDC -3.6VDC	140VDC 125VDC	8.6VDC	6.3VAC	0V	
V 17	6BG6G	-20VDC	0V	13VDC	-20VDC	-20VDC	0V	6.3VAC	265VDC	TOP CAP *
V 18	6W4GT	0V	0V	600VDC	600VDC	340VDC	0V	600VDC	600VDC	
V 19	1X2A	* DO NOT MEASURE								
V 20	5U4G	0V	360VDC	165VDC	360VAC	0V	360VAC	0V	360VDC	
V 21	16TP4	¶ 165VDC	165VDC 90VDC	PIN 10 475VDC	PIN 11 150VDC	PIN ¶	12 165VDC			

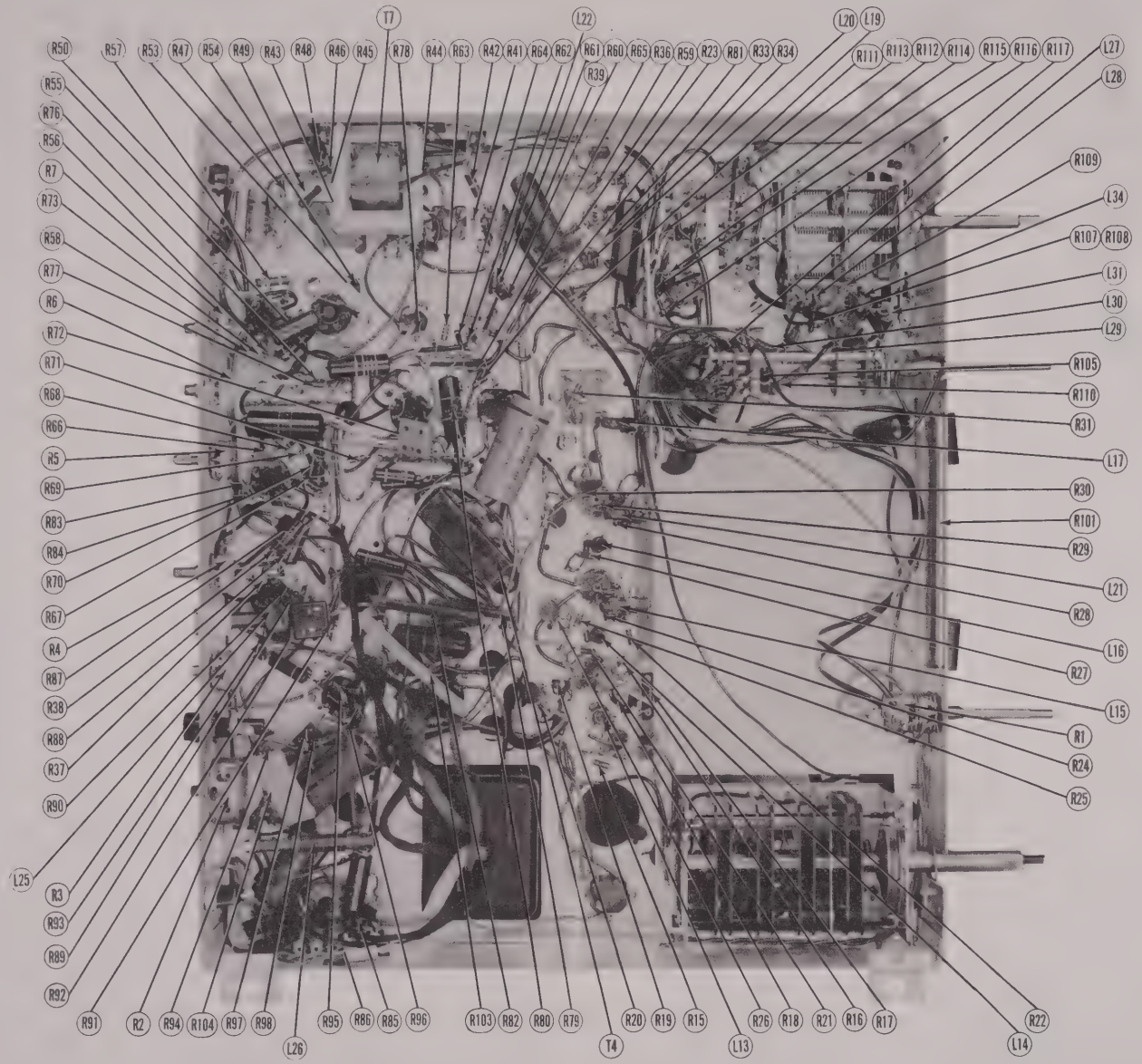
FUNCTION SWITCH IN TV POSITION
FOCUS CONTROL COUNTER CLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER
¶ 6.3VAC MEASURED ACROSS FILAMENTS
* DO NOT MEASURE

RESISTANCE READINGS

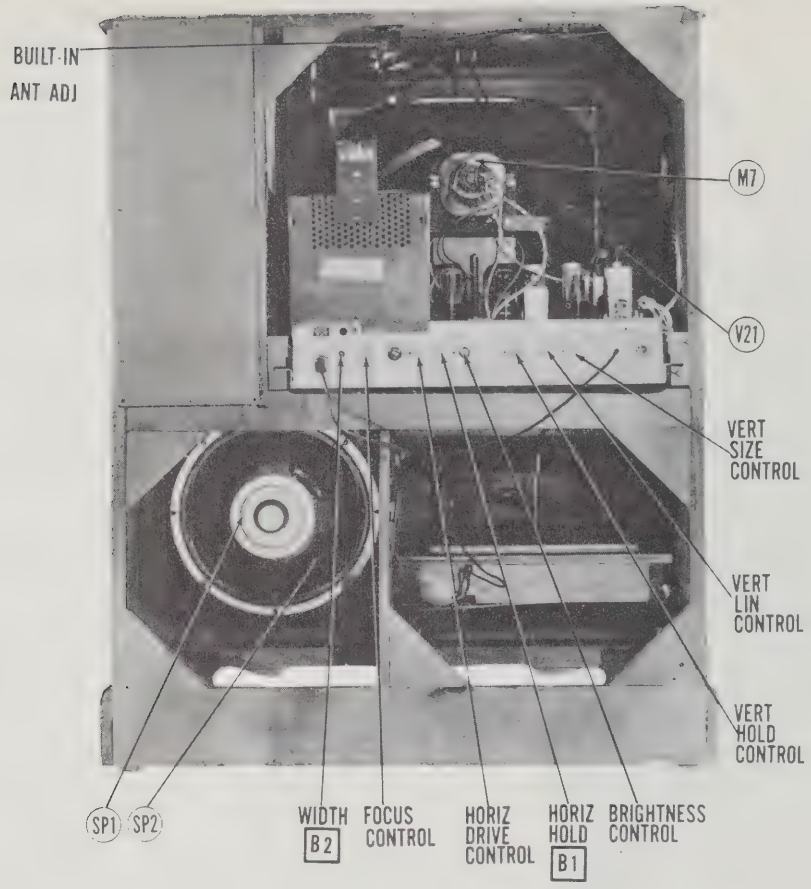
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†5.2KΩ	†5.2KΩ	.1Ω	0Ω	570KΩ	570KΩ	0Ω		
V 2	6J6	†19KΩ	†5.5KΩ	0Ω	.1Ω	47KΩ	47KΩ	0Ω		
V 3	6CB6	100KΩ	180Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 4	6CB6	100KΩ	200Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 5	6CB6	.3Ω	200Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 6	6CB6	5.6KΩ	1.5KΩ	.1Ω	0Ω	†7.3KΩ	†3KΩ	0Ω		
V 7	6AU6	†3.4KΩ	†2.2KΩ	†2.2KΩ	†2.2KΩ	200KΩ	†1.1KΩ	†2.2KΩ		
V 8	6BA6	.1Ω	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	100Ω		
V 9	6BA6	.1Ω	0Ω	.1Ω	0Ω	†4KΩ	†4KΩ	100Ω		
V 10	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	0Ω	25KΩ		
V 11	6SQ7	0Ω	10Meg	0Ω	0Ω	0Ω	†220KΩ	.1Ω	0Ω	
V 12	6K6GT	Inf.	.1Ω	†2KΩ	†1.6KΩ	470KΩ	†1.1KΩ	0Ω	470Ω	
V 13	6AU6	10Meg	0Ω	.1Ω	0Ω	†100KΩ	†20KΩ	0Ω		
V 14	6SN7GT	168KΩ	8.6KΩ	68KΩ	225KΩ	†9KΩ	6.8KΩ	.1Ω	0Ω	
V 15	6BL7GT	1Meg	#16KΩ	5.5KΩ 560Ω	1Meg 2Meg	#2.2Meg #4.7Meg	0Ω	.1Ω	0Ω	
V 16	6SN7GT	650KΩ	†28KΩ	1.8KΩ	470KΩ	†175KΩ †275KΩ	1.8KΩ	.1Ω	0Ω	
V 17	6BG6G	470KΩ	0Ω	120Ω	470KΩ	470KΩ	Inf.	.1Ω	†8.3KΩ	TOP CAP # 18Ω
V 18	6W4GT	Inf.	Inf.	180KΩ	#11Ω	†150Ω	Inf.	#6.8Ω	#7Ω	
V 19	1X2A	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #365Ω
V 20	5U4G	Inf.	30KΩ	†2.2KΩ	30Ω	Inf.	30Ω	Inf.	30KΩ	
V 21	16TP4	†2.2KΩ	100KΩ 130KΩ	PIN 10 #10KΩ	PIN 11 †335KΩ	PIN 12 †2.2KΩ				

FUNCTION SWITCH IN TV POSITION
FOCUS CONTROL COUNTERCLOCKWISE
† MEASURED FROM PIN8 OF V 20
# MEASURED FROM PIN 3 OF V 18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold slug (B1) counter-clockwise, while switching the channel selector on and off. the channel until picture is out of sync. Turn B1 clockwise and note the number of horizontal blanking bars present just before the picture pulls into sync. The picture should pull-in when at least one blanking bar is present. Continue to turn B1 clockwise while switching channel selector on and off the channel until picture is out of sync. Turn B1 counter-clockwise and note the number of bars present just before the picture pulls into sync. If one bar is present before picture pull-in, turn B1 an additional 1/4 turn counter-clockwise. If two bars appear just before the picture pull-in, turn B1 an additional 1/2 turn counter-clockwise.

Adjust the Horizontal Drive control for minimum resistance (fully counter-clockwise) or as close as possible. If a white vertical bar is seen in center of picture, turn the drive control slightly clockwise until white bar disappears. Adjust the horizontal size slug (B2) until picture is of proper width. To reduce the tendency toward regeneration, it is recommended that the Horizontal Drive control be set at minimum resistance.

DISASSEMBLY INSTRUCTIONS

1. Remove seven push on type control knobs.
2. Remove six wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in FM antenna.
4. Disconnect phonograph.
5. Remove AM antenna.
6. Disconnect AM-FM Tuner plug.
7. Disconnect speaker.
8. Disconnect phono motor plug.
9. Remove four 7/16" hex head bolts from chassis. Remove chassis.
10. Remove four phillips hear screws securing speaker to cabinet. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6J6	6J6	7BF	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Amp.	6CB6	6CB6	7CM	
V7	AGC Keyer	6AU6	6AU6	7BK	
V8A	1st Sound IF Amp.	6BA6	6BA6	7BK	
B	1st Sound IF Amp.	6AU6	6AU6	7BK	
V9A	2nd Sound IF Amp.	6BA6	6BA6	7BK	
B	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11A	AF Amplifier	6SQ7	6SQ7	8Q	
B	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Sync. Seperator	6AU6	6AU6	7BK	
V14	Sync. Amp.-Hor. AFC	6SN7GT	6SN7GT	8BD	
V15A	Vert. Oscillator - Vert. Amplifier	6BL7GT	6BL7GT		
B	Vert. Oscillator-Vert. Amplifier	12BH7	12BH7	9A	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19A	H.V. Rectifier	1X2A	1X2A	7CB	
B	H.V. Rectifier	1X2	1X2	7CB	
V20	L.V. Rectifier	5U4G	5U4G	5T	
V21A	Picture Tube	16TP4	16TP4	12D	
B	Picture Tube	17BP4	17BP4	12D	
C	Picture Tube	19AP4	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	475	4232						▪ Filter
B	30	475							■ Filter
C	30	475							▲ Filter
C2A	10	475	4228						▪ Decoupling
B	40	475							■ Filter
C	20	450							▲ Decoupling
D	5	50							Hor. Output Cath.
C3A	20	475	4230						■ Decoupling
B	50	50							▲ Vert. Output Cath.
C	20	25							Output Cathode
C4	20	450	4227						Decoupling
C5	20	450	4227						Hor. Output Screen ♦
C6	5	50	4209						Stabilizing Cap
C7	1000			SI1000	D6-102		GP2L-001	19C1	AVC Filter
C8	10			SI10	D6-100		GP1K-10	19C19	RF Amp. Dec.
C9	1000			SI1000	D6-102		GP2L-001	19C1	RF Amp. Fil.
C10	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Neutralizing
C11	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Fixed Trimmer *
C12	.5				TCZ-.5				RF Coupling
C13	5			SI5N750	TCN-5		N750K-5		Fixed Padder
C14	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Dixed Trimmer *
C15	10			SI10	D6-100		GP1K-10	19C19	Conv. Grid Filter
C16	1.5			SI1.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C17	10			SI10	D6-100		GP1K-10	19C19	Osc. Grid Cap.
C18	2						N750K-2		Osc. Feedback
C19	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C20	72	500			TCZ-72		NPOM-72		Fixed Trimmer
C21	1000			SI1000	D6-102		GP2L-001	19C1	Conv. Filament
C22	470						323-500		RF Bypass
C23	330			SI330	D6-231			19C14	IF Coupling
C24	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	Filament Bypass
C25	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C26	1.5		4082	SI1.5NPO	TCZ-1.5		NPOK-1.5		IF Coupling
C27	10		4027	SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C28	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C29A	4000		4036	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	1st V. IF Dec.
B	4000					1D5D4			1st V. IF Fil.
C30	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Cath. *
C31	1.2		4074						IF Coupling
C32	.22	200	4131	P488-22		GT2P25		2TM-P22	AGC Filter
C33	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C34	1.5		4082	SI1.5NPO	TCZ-1.5		NPOK-1.5		IF Coupling *
C35	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C36A	4000		4036	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	2nd V. IF Dec.
B	4000					1D5D4			2nd VΩ IF Fil.
C37	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Cath. *
C38	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C39	1.2		4074						IF Coupling †
C40	22			SI22	TCZ-220		NPOK-22	29C12	Fixed Trimmer
C41A	4000		4036	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	3rd V. IF Dec.
B	4000					1D5D4			3rd V. IF Fil.
C42	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Cath.
C43	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C44	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C45	5	500	4028	1468-000005	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Det. Filter
C46	47			SI47NPO	TCZ-47		NPOM-47	29C14	Fixed Trimmer *
C47	.22	200	4131	P488-22		GT2P25		2TM-P22	Video Coupling †
C48	1500		4090	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C49	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Cath.
C50	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	1st V . IF Fil.
C51	1500		4090	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd S. IF Dec. #
C52	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Fil.
C53	30		4043	SI30	D6-300	5W5Q3	GP1K-30	19C24	Diode Load Cap
C54	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C55	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	.0047	400	4127	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	De-emphasis
C57	47	500	4009	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	Tone Comp. #
C58	820	500	4089	1479-0008		1W5T8		MS-38	Tone Comp. ¶
C59	.033	600	4153	P688-033		PTE8S3		6TM-S33	Tone Comp. ¶
C60	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C61	.01	600	4105	P688-01	D6-103	PTE8S1	821-01	6TM-S1	Audio Coupling
C62	.0047	600	4138	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Output Plate
C63	220		4026	31220	D6-220	5W5T25	GP2K-220	19C13	Sync. Coupling #
C64	47		4009	3147	D6-470	5W5Q5	GP1K-47	19C25	Sync. Sep. Grid *
C65	.047	630	4133	P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C66	.0022	600		P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Net
C67	.0047	600	4128	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net
C68	.0047	600	4128	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net
C69	7500	500	4083	P688-0075		PTE16D75		MB-D75	Vert. Osc. Grid
C70	.1	600	4144	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C71	.047	600	4141	P688-047		PTE6S5		6TM-S47	Vert. Discharge
C72	.0047	1000	4149	P1068-0047		PTE16D5		MB-D47	Vert. Sweep Coupling
C73	.047	400	4133	P488-047	DF-503	PTE4S5		4TM-S47	Fixed Trimmer *
C74	.1	600	4144	P688-1	DF-104	PTE6P1		6TM-P1	Decoupling *
C75	.005	600	4029	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Voltage Divider *
C76	330		4010	31330	D6-331	5W5T3	GP2K-330	19C14	Hor. Sync. Coupling
C77	.01	400	4143	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Hor. AFC Plate
C78	.022	1000	4135	P1068-022		PTE16S2		MB-S22	Hor. Sweep Feedback
C79	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AFC Filter
C80	.01	400	4142	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AFC Filter
C81	.1	200	4143	P288-1	DF-104	PTE2P1		2TM-P1	AFC Filter
C82	3900	500	4085	1464-004		1DR5D4		MS-24	Fixed Trimmer
C83	270	500	4022	1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	Hor. MV Feedback
C84	.0047	600	4128	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Hor. Sweep Coupling
C85	250		4066	31250	TC2-240	5R5T25	HPOM-250	MS-325	Hor. Discharge
C86	220		4026	31220	D6-221	5R5T25	GP2K-220	19C13	Hor. Discharge
C87	.25	600	4129	684-25		GT6P25		6TM-P25	Damper Filter
C88	500	1500	4076	1469-HV-0005					Fixed Trimmer
C89	500	1000	4075	1469-HV-0005					Hor. Sweep Coupling
C90	500	20000	4056	HV20C	TV3-502				H. V. Filter
C91	.1	600	4144	P688-1	DF-104	PTE6P1		6TM-P1	RF Bypass
C92	.01	600	4105	P688-01	D6-103	PTE8S1	821-01	6TM-S1	Line Filter
C93	.01	600	4105	P686-01	D6-103	PTE8S1	821-01	6TM-S1	Line Filter
C94	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass

* Not used in all models.
† Sets previous to serial number G067626 use 1.5MMF in this application. Mfgrs. Part #4082
‡ Sets previous to serial number G067626 use .005MFD in this application. Mfgrs. Part # 4029.
‡ Sets previous to serial number H070169 use .001MFD in this application. Mfgrs. Part # 4146.
♦ Some sets use .047MFD in this application. Mfgrs. Part # 4133.
Some sets use 5000 MMF in this application. Mfgrs. Part # 4029.
Used only in chassis 172 and 174.
¶ Used only in chassis 176.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	4833				Contrast Control - Front
B	500KΩ	½					Volume Control And SW - Rear
R2	10KΩ	4	4834		RTV-186	VK-137	Focus Control - Wire Wound
R3A	100KΩ	½	4835	Q11-128	AG-49-S	AN-40	Horizontal Drive Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R3A Per Instructions
R4A	50KΩ	½	4831	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req.	Not req.	FKS-1/4	AK-1	Attach to R4A Per Instructions
R5A	1Meg	½	4832	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KS8-3	AK-1	Attach to R5A Per Instructions
R6A	5000Ω	½	4820	Q11-114	AG-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A Per Instructions
R7A	2.5Meg	½	4821	Q11-239	AG-84-S	AN-83	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R7A Per Instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTOR - 10% UNLESS OTHERWISE STATED
R8	470KΩ 20%	½		BTS-470K	AGC Network
R9	1200Ω	½		BTS-1200	RF Amp. Plate - See Note 6
R10	220Ω 20%	½			Parasitic Suppressor
R11	47KΩ 20%	½			Converid Grid
R12	15KΩ 20%	½			Converter Plate
R13	47KΩ 20%	½			Osc. Grid
R14	1500Ω	½		BTS-1500	Osc. Plate
R15	1000Ω 20%	½	4542	BTS-1000	Decoupling
R16	100KΩ 20%	½	4511	BTS-10K	AGC Network
R17	330Ω 20%	½	4509	BTS-330	AGC Network
R18	3300Ω 20%	½	4607	BTS-3300	1st Video IF Amp. Grid - See Note 7 and 8
R19	39Ω	½	4620		1st Video IF Amp. Cathode - See Note 9
R20	150Ω	½	4616	BTS-150	1st Video IF Amp. Cathode - See Note 1
R21	1000Ω 20%	½	4542	BTS-1000	1st Video IF Amp. Decoupling
R22	330Ω 20%	½	4509	BTS-330	AGC Network
R23	3900Ω	½	4671	BTS-3900	AGC Network - See Note 10
R24	3300Ω 20%	½	4607	BTS-3300	2nd Video IF Transformer Shunt - See Note 7 and 8
R25	47Ω	½	4639		2nd Video IF Amp. Cathode
R26	150Ω	½	4616	BTS-150	2nd Video IF Amp. Cathode - See Note 1
R27	1000Ω 20%	½	4542	BTS-1000	2nd Video IF Amp. Decoupling
R28	3300Ω 20%	½	4607	BTS-3300	3rd Video IF Amp. Grid
R29	200Ω	½	4642		3rd Video IF Amp. Cathode
R30	1000Ω 20%	½	4542	BTS-1000	3rd Video IF Amp. Decoupling
R31	5600Ω 5%	½	4603	BTS-5600-5%	Video Det. Diode Load
R32	680Ω	½	4514	BTS-680	Contrast Control Shunt - See Note 1
R33	3900Ω 5%	½	4654	BTS-3900-5%	Video Amp. Plate
R34	1200Ω	½	4553	BTS-1200	Video Amp. Plate
R35	47KΩ	½	4504	BTS-47K	AGC Keying Grid - See Note 1
R36	100KΩ 20%	½	4511	BTS-100K	AGC Network
R37	68KΩ	½	4661	BTS-68K	Voltage Divider
R38	100KΩ 20%	½	4511	BTS-100K	Picture Tube Grid - See Note 11
R39	330KΩ 20%	½	4677	BTS-330K	Picture Tube Cathode - See Note 12
R40	100KΩ	½	4571	BTS-100K	ACC Anode Load - See Note 1
R41	100Ω	½	4566	BTS-100	1st Sound IF Amp. Cathode
R42	1000Ω	½	4542	BTA-1000	1st Sound IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	IDENTIFICATION CODES
R43	100Ω	½	4566	BTS-100	2nd Sound IF Amp. Cathode
R44	1000Ω	½	4542	BTA-1000	2nd Sound IF Amp. Decoupling
R45	270Ω	½	4663	BTS-270	Balancing
R46	15KΩ	½	4521	BTS-15K	De-emphasis
R47	12KΩ	½	4680	BTS-12K	Ratio Det. Diode Load - See Note 13
R48	12KΩ	½	4660	BTS-12K	Ratio Det. Diode Load - See Note 13
R49	220KΩ	½	4618	BTS-220K	AVC Network
R50	1Meg	½	4684	BTS-1Meg	Series Phono - See Note 2
R51	220KΩ	½	4618	BTS-220K	Series Phono - See Note 3
R52	4700Ω	½	4504	BTS-4700	Tone Compensation - See Note 3
R53	20Meg	½			AF Amp. Grid - See Note 4
R54	20Meg	½			AF Amp. Grid - See Note 4
R55	220KΩ	½	4618	BTS-220K	AF Amp. Plate
R56	470KΩ	½	4506	BTS-470K	Output Grid
R57	470Ω	1		BTA-470	Output Cathode
R58	470Ω	1		BTA-470	Decoupling - See Note 12
R59	47KΩ	½	4504	BTS-47K	Isolation - See Note 13
R60	20Meg 20%	½			Sync. Sep. Grid - See Note 5
R61	20Meg 20%	½			Sync. Sep. Grid - See Note 5
R62	22KΩ	½	4628	BTS-22K	Sync. Sep. Screen
R63	18KΩ	½	4662	BTS-18K	Voltage Divider
R64	100KΩ 20%	½	4511	BTS-100K	Sync. Sep. Plate
R65	12KΩ 5%	½		BTS-12K-5%	Sync. Sep. Plate
R66	220KΩ	½	4618	BTS-220K	Sync. Amp. Grid
R67	6800Ω	½	4557	BTS-6800	Sync. Amp. Cathode
R68	6800Ω	½	4557	BTS-6800	Sync. Amp. Plate
R69	22KΩ	½	4628	BTS-22K	Integrator
R70	10KΩ 20%	½	4515	BTS-10K	Integrator
R71	10KΩ 20%	½	4515	BTS-10K	Integrator
R72	1Meg	½	4614	BTS-1Meg	Vertical Osc. Grid
R73	2.2Meg 20%	½	4502	BTS-2.2Meg	Vertical Osc. Plate
R74	100KΩ	½	4571	BTS-100K	Voltage Divider - See Note 1
R75	6.8Meg	½	4604	BTS-6.8Meg	Voltage Divider - See Note 1
R76	3900Ω	½	4671	BTS-3900	Vertical Peaking - See Note
R77	1Meg 20%	½	4513	BTS-1Meg	Vertical Amp. Grid
R78	560Ω 20%	½	4507	BTS-560	Vertical Amp. Cathode
R79	5000Ω	3			Vertical Amp. Plate - Wire Wound - See Note 1
R80	100KΩ 20%	½	4511	BTS-100K	Voltage Divider
R81	100KΩ 20%	½	4511	BTS-100K	Voltage Divider
R82	10KΩ	5	4737	1 3/4A-10K	Decoupling - Wire Wound
R83	100KΩ	½	4571	BTS-100K	Horizontal AFC Grid
R84	68KΩ 20%	½	4661	BTS-68K	Horizontal AFC Cathode
R85	470Ω	½	4504	BTS-4700	Horizontal AFC Plate
R86	3900Ω 5%	½	4654	BTS-3900-5%	Voltage Divider - See Note 10
R87	12KΩ 5%	½		BTS-12K-5%	Horizontal AFC Filter
R88	470KΩ 20%	½	4506	BTS-470K	Horizontal AFC Filter
R89	1800Ω	½	4640	BTS-1800	Horizontal MV Cathode
R90	5600Ω	½	4629	BTS-5600	Horizontal MV Plate
R91	22KΩ	½	4506	BTS-22K	Horizontal MV Plate Decoupling
R92	470KΩ	½	4506	BTS-470K	Horizontal MV Grid
R93	150KΩ	1	4589	BTA-150K	Horizontal MV Plate - See Note 14
R94	820Ω	½	4651	BTS-8200	Horizontal Peaking
R95	100Ω	½	4566		Parasitic Suppressor
R96	470KΩ	½	4506	BTS-470K	Horizontal Output Grid
R97	120Ω	2	4657	BW-2-120	Horizontal Output Cathode
R98	8200Ω	1	4656	BTA-8200	Horizontal Output Screen
R99	4.7Ω	½	4719	BW-½-4.7	HV Rectifier Filament - Wire Wound
R100	470KΩ 20%	½	4506		HV Filter - See Note 2
R101A	1100Ω	10	4731		Filter - Wire Wound
B	800Ω				Filter - Wire Wound
R102	25KΩ	10	4712	1 3/4A-25K	Bleeder - Wire Wound - See Note 3
R103	150Ω	10	4730	1 3/4A-150	Filter - Wire Wound
R104	1500Ω	4	4732		Focus Coil Shunt - Wire Wound

Note 1. Not used in all models.
Note 2. Not used in Chassis 176.
Note 3. Used only in Chassis 176.
Note 4. Some sets may use single 10 meg resistor in place of R53 and R54.
Note 5. Some sets may use single 10Meg resistor in place of R60 and R61.
Note 6. Some models use 2200Ω resistor in this application.
Note 7. Some models use 3900Ω resistor in this application.
Note 8. Some models use 1800Ω resistor in this application.
Note 9. Some models use 47Ω resistor intthis application.
Note 10. Some models use 3300Ω resistor in this application.
Note 11. Some models use 1Meg resistor in this application.
Note 12. Some models use 100KΩ resistor in this application.
Note 13. Some models use 10KΩ resistor in this application.
Note 14. Some models use 220KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.1A	760VCT .200ADC	5V ② 3A	② 1.2A	5023			
			SEC. 4	SEC. 5				
			6.3V ② .9A	6.3V ② 9.2A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	880Ω	980Ω	5127	A-8122	A4000 ①	TB0-1 ①	Vertical Block Osc.
T3	365Ω Tap ② 1Ω, 2.5Ω, 9.7Ω, 17.9Ω, and 36Ω	0Ω	5146				Horizontal Output
T4	1.2KΩ Tap 1Ω	0Ω	5140	A-8112 ①	A-3038 ①	TS0-5 ①	Vertical Output
T5	4090Ω		5341				Focus Coil
T6A	32Ω		5389				Horizontal Deflection Coil
B	5Ω						Vertical Deflection Coil

① Drill new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	6.5KΩ	4.3Ω	375Ω	.5Ω	5131	A-3849 ①	A-2931 ①	RO-13 ①	① Drill new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD. RES.	RATINGS V. C. IMP.	HOFFMAN PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	4.3Ω	9070	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	HOFFMAN PART No.	MEISSNER PART No.	NOTES
L1	Antenna Coil	0Ω	0Ω			Part of Tuner Part # 99619
L2	Antenna Coil	0Ω	0Ω			Part of Tuner Part # 99619
L3	RF Coil	0Ω				Part of Tuner Part # 99619
L4	RF Coil	0Ω				Part of Tuner Part # 99619
L5	Mixer Grid Coil	0Ω				Part of Tuner Part #99619
L6	Mixer Grid Coil	0Ω				Part of Tuner Part # 99619
L7	Osc. Coil	0Ω				Part of Tuner Part # 99619
L8	Osc. Coil	0Ω				Part of Tuner Part # 99619
L9	Fil. Choke	0Ω				Part of Tuner Part # 99619
L10	Fil. Choke	0Ω				Part of Tuner Part # 99619
L11	Conv. Plate Coil	.2Ω				Part of Tuner Part # 99619
L12	Trap Coil	.5Ω				.85 Microhenry - Part of Tuner Part # 99619
L13	1st Video IF	.2Ω	.3Ω	5391		
L14	2nd Video IF	.3Ω	.3Ω	5335		
L15	Adj. Channel Sound Trap	.1Ω		5344		
L16	3rd Video IF	.3Ω	.3Ω	5335		
L17	Adj. Channel Sound Trap	.1Ω		5342		
L18	4.5MC Trap			5376		Not used in all Models
L19	Peaking	17Ω		5339	19-1923 ①	350 Microhenries Wound on 33KΩ Resistor
L20	Peaking	18Ω		5340	19-1923	350 Microhenries
L21	1st Sound IF	.1Ω		5386		
L22	Fil. Choke	0Ω		5133		
L23	2nd Sound IF	.1Ω	.1Ω	5304		
L24	Ratio Det. Trans.	.1Ω	.1Ω	5305		
L25	Horiz. Osc. Coil	78Ω		5300		Horizontal Hold Control
L26	Width Coil	.3Ω		5317		

① Parallel With 33KΩ Resistor.

FUSES

ITEM No.	TYPE	RATING	HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG	3 Amp.	9648		31303.2	342001	
M2	3AG	1/4Amp.	9515		313.250	357001	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	HOFFMAN PART No.	INSTALLATION NOTES
M3	Bayonet	6-8	.2	White	9676	Type #51 (Channel Selector Light)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M4	RF Tuner	99619	
M5	4th Video IF Trans	5336	
	Peaking Coil	5338	Wound on 12 KΩ Resistor
	Video Det. Crystal	9075	Some models use ½ 6AL5 Tube } Video Det. Assembly
	Resistor 8.2KΩ 5%	4641	
	Capacitor 2.2MMF	4069	
	Capacitor 1.2MMF	4074	
M6	Switch	6025-2	Function
M7	Ion Trap	9694	
	Safety Glass	753	
	Escutcheon	2468A	Control Plate
	Dial	33504	Channel Assembly
	Knob	33514	Channel Selector Assembly
	Knob	33508	Contrast Assembly
	Knob	33513	Volume Assembly
	Knob	33512	Function Switch Assembly
	Knob	3719	Brightness
	Knob	3719	Vertical Hold
	Knob	3691	Antenna

PHONO CARTRIDGE and NEEDLE

ITEM No.	HOFFMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M8		ACD-J	A-1 A-3	W22AB	A62A A65MG	96-T	0-3 Or S-3 and D-1 or S-1	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
V22A	Converter	6BE6	6BE6	7CH	
B	Converter	6BA7	6BA7	8CT	
V23	IF Amplifier	6BA6	6BA6	7BK	
V24	FM Cath. Follower - AM Det. -AVC	6AV6	6AV6	7BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C95	.047	200	4147	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C96	68		4080	SI68	D6-680	5W5Q7	GP1K-68	19C10	Osc. Grid Cap
C97	100		4012	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Anode Bypass
C98	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	Osc. Anode Dec.
C99	5		4081	SI5NPO	TCZ-4.7		NPOK-5		Fixed Trimmer
C100	68		4080	SI68	D6-680	5W5Q7	GP1K-68	19C10	FM Osc. Grid Cap *
C101	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	Filament Bypass
C102	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C103	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C104	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	IF Screen
C105	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	IF Cathode
C106	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	IF Fil.
C107	100		4079	SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter
C108	51		4078	SI50	D6- 500	5W5Q5	GP1K-50	19C28	Diode RF Filter
C109	.047	200	4147	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C110	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	FM Cath. Fol. Cath.
C111	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	FM Cath. Fol. Plate
C112	5000		4029	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C113	.047	200	4147	P288-047	DF-503	PTE4S5		2TM-S47	Audio Coupling

* Not used on all models

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HOFFMAN PART No.	IRC PART No.	
R105	220KΩ 20%	1	4500	BTA-220K	Screen Dropping
R106	220KΩ	1/2	4500	BTS-220K	AVC Network
R107	10Ω	1/3	4529		Parasitic Suppressor } See note.
R108	10Ω	1/3	4529		Parasitic Suppressor } See note.
R109	22KΩ	1/2	4628		Osc. Grid
R110	18KΩ	2	4631		Osc. Anode
R111	68Ω	1/2	4593		IF Amp. Cathode
R112	47KΩ	1	4516		IF Amp. Screen
R113	2.2Meg	1/2	4502	BTS-2.2Meg	AVC Network
R114	120Ω	1/2	4632	BTS-120	FM Cathode Follower Cathode
R115	1200Ω	1/2	4523	BTS-1200	FM Cathode Follower Cathode
R116	68KΩ	1/2	4661	BTS-68K	FM Cathode Follower Plate
R117	1200Ω	2	4668	BTB-1200	Decoupling

Note: Not used in all models.

COILS (RF-IF)

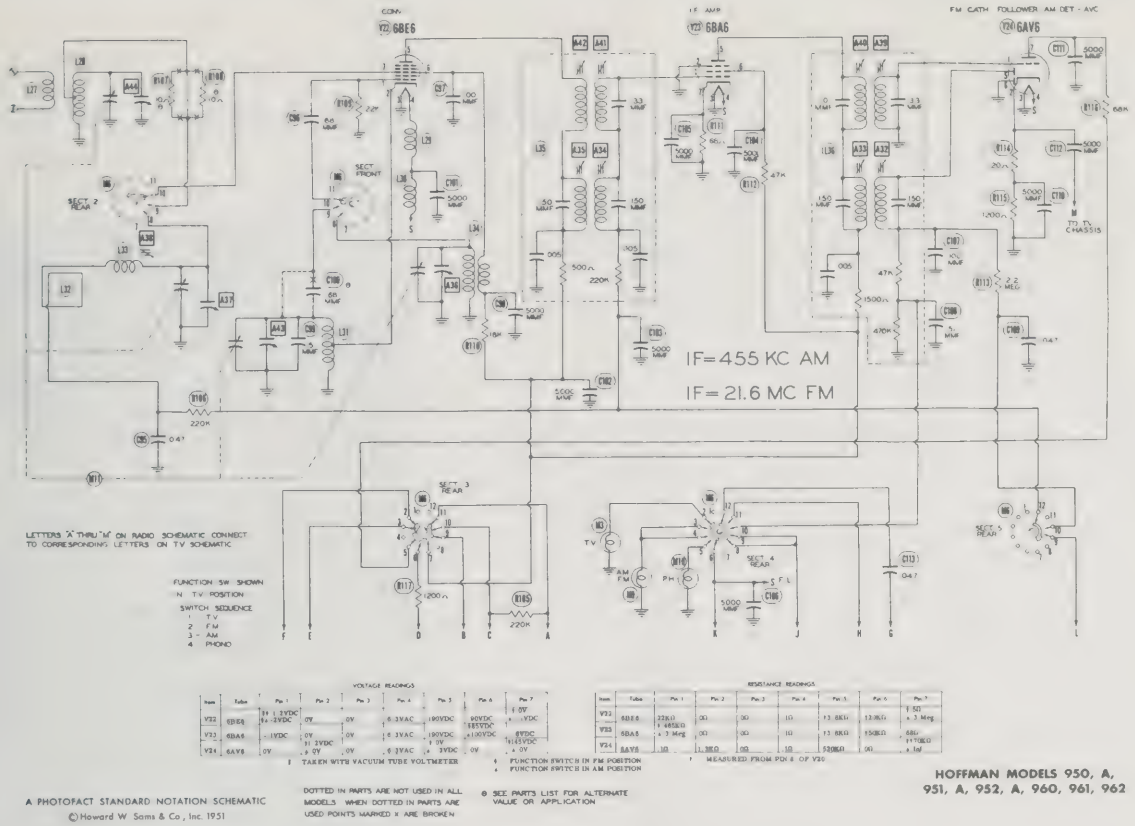
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	
L27	FM Ant. Coil Primary	0Ω		5380		
L28	FM Ant. Coil Secondary	0Ω		5381		
L29	Fil. Choke	0Ω		5133		
L30	Fil. Choke	0Ω		5133		
L31	FM Osc. Coil	0Ω		5379		
L32	Loop Ant.	1.2Ω		5345		
L33	Loop Antenna Loading Coil	3.8Ω		5346		
L34	AM Osc. Coil	.5Ω	5.2Ω	5378		
L35	1st IF	10Ω .2Ω	10Ω .1Ω	5387		Dual IF(Am Section) (FM Section)
L36	2nd IF	12Ω .1Ω	11Ω .1Ω	5388		Dual IF(AM Section) (FM Section)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOFFMAN PART No.		
M9	Bayonet	6-8	.2	White	9676		Type #51 (AM-FM)
M10	Bayonet	6-8	.2	White	9676		Type #51 (Phono)

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M11	Tuning Capacitor	4412-1	AM-FM Tuning (15-507MMF, 12-182MMF)
	Dial	33506	AM-FM
	Knob	33515	AM-FM Tuning Assembly


IF=455 KC AM
IF=21.6 MC FM
LETTERS 'A' THRU 'M' ON RADIO SCHEMATIC CONNECT TO CORRESPONDING LETTERS ON TV SCHEMATIC
FUNCTION SW SHOWN IN TV POSITION
SWITCH SEQUENCE
1 - TV
2 - FM
3 - AM
4 - PHONO
VOLTAGE READINGS
RESISTANCE READINGS
1 TAKEN WITH VACUUM TUBE VOLTMETER
4 FUNCTION SWITCH IN FM POSITION
5 FUNCTION SWITCH IN AM POSITION
7 MEASURED FROM PIN 8 OF V20
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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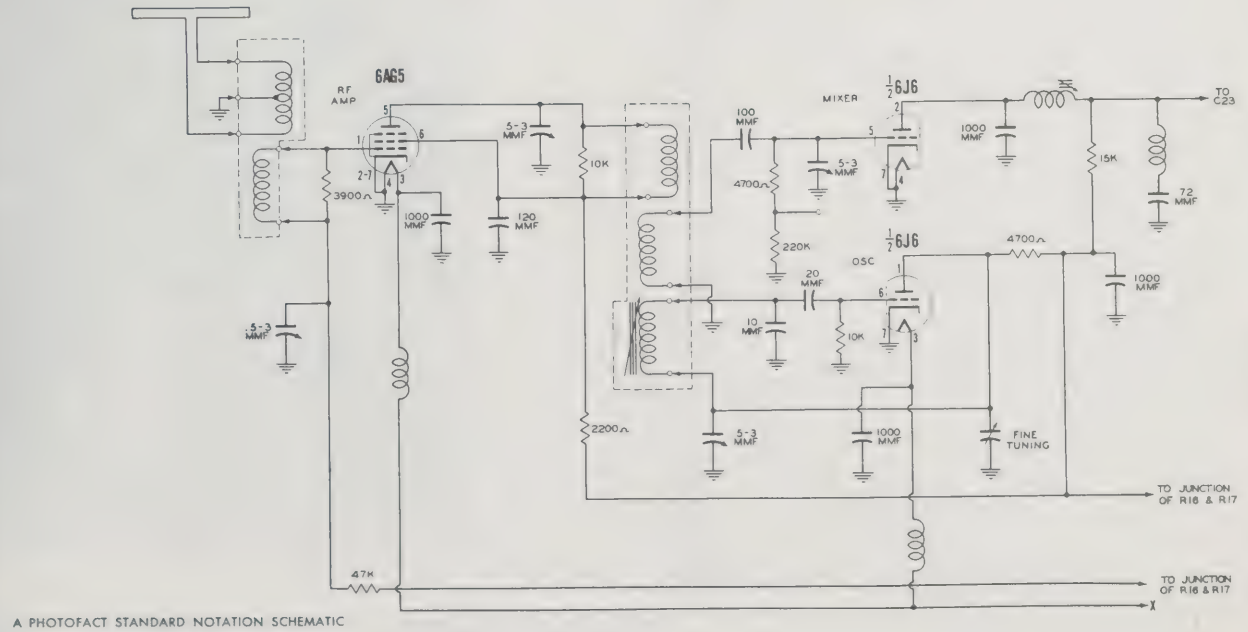
HOFFMAN MODELS 950, A, 951, A, 952, A, 960, 961, 962

AM-FM TUNER SCHEMATIC



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ALTERNATE TV TUNER SCHEMATIC

PHOTOFACT* Folder

MAJESTIC MODELS
17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, 1710

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MODEL 1610B

MAJESTIC MODELS
17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, 1710

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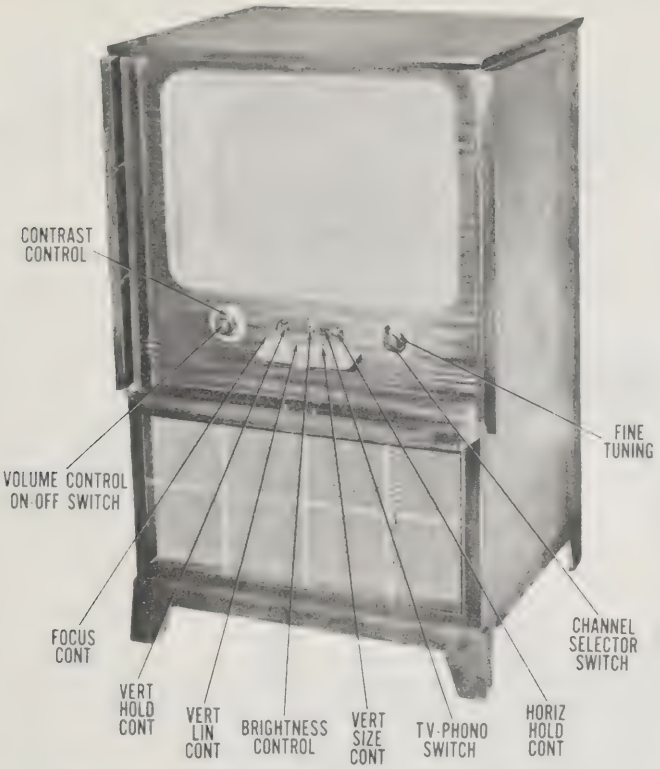
Date 3/51 Set No. 127—Folder No. 7

PHOTOFACT* Folder

MAJESTIC MODELS 17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710

MAJESTIC MODELS 17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710



MAJESTIC MODEL 1610A

TRADE NAME	MAjestic	Series	Models
		99	120, 121, B
		100	141, B, 142, B, 1400, B,
		101	17DA, GA, HA, 141C, 160, B, 162, 163, 170, 1600, B, 1710
		102	1605, B, 1610, B
		103	902, 903, 910, 911
		105	1401
MANUFACTURER	Majestic Radio And Television, Div. of Wilcox-Gray Corp., 70 Washington St. Brooklyn, N.Y.		
TYPE SET	Television Receiver		
TUBES	Twenty		
POWER SUPPLY	110-120 Volts AC 60 Cycle		
RATING	1.6 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13		

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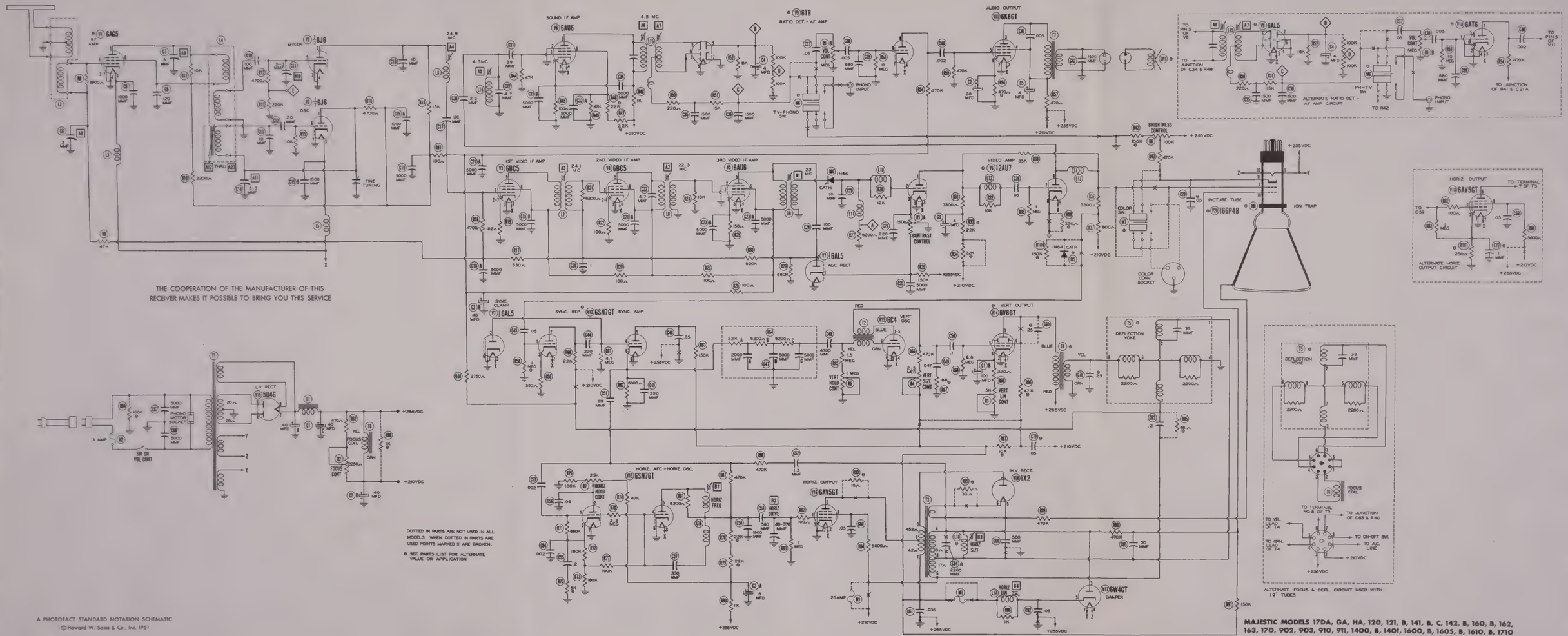
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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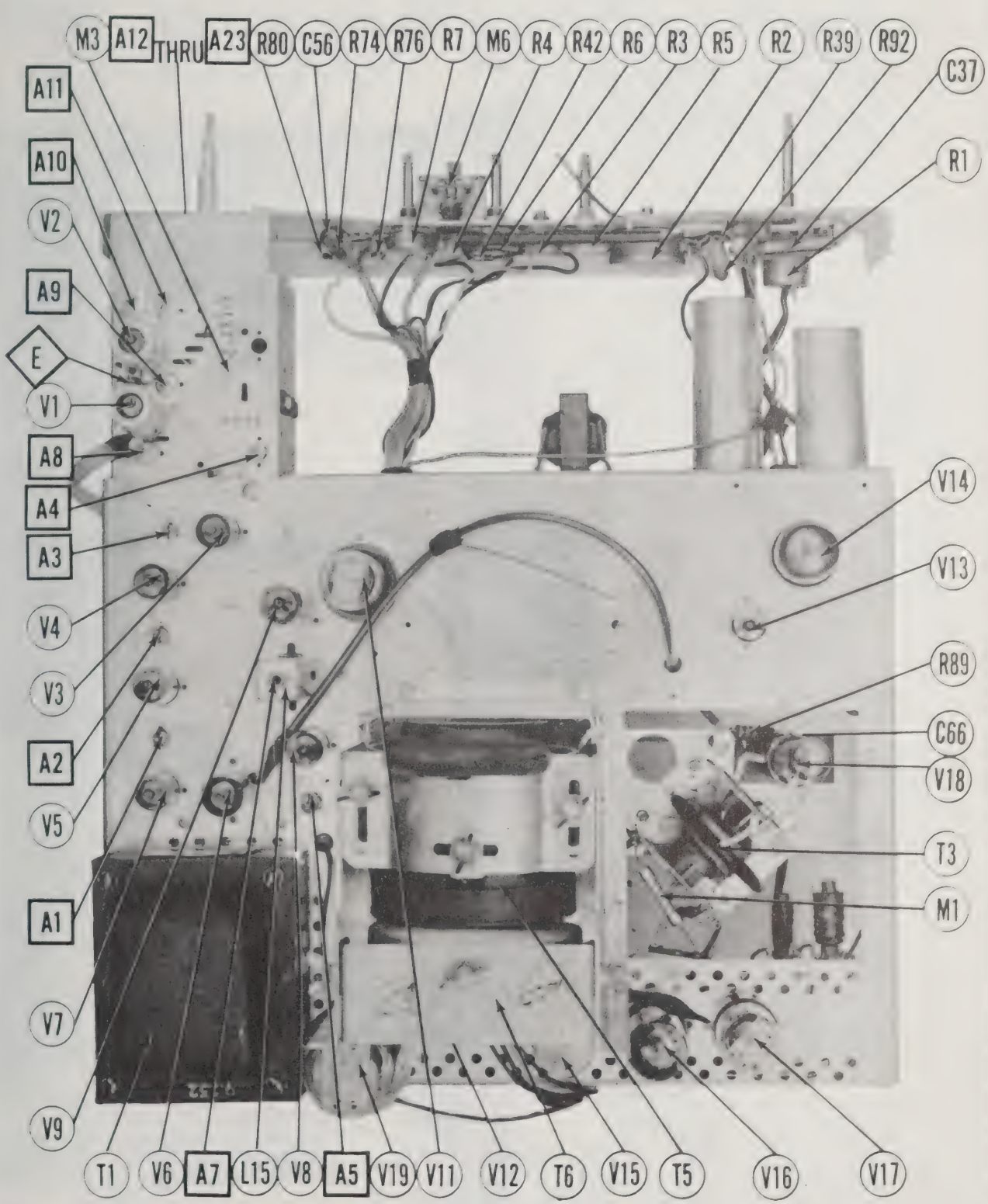
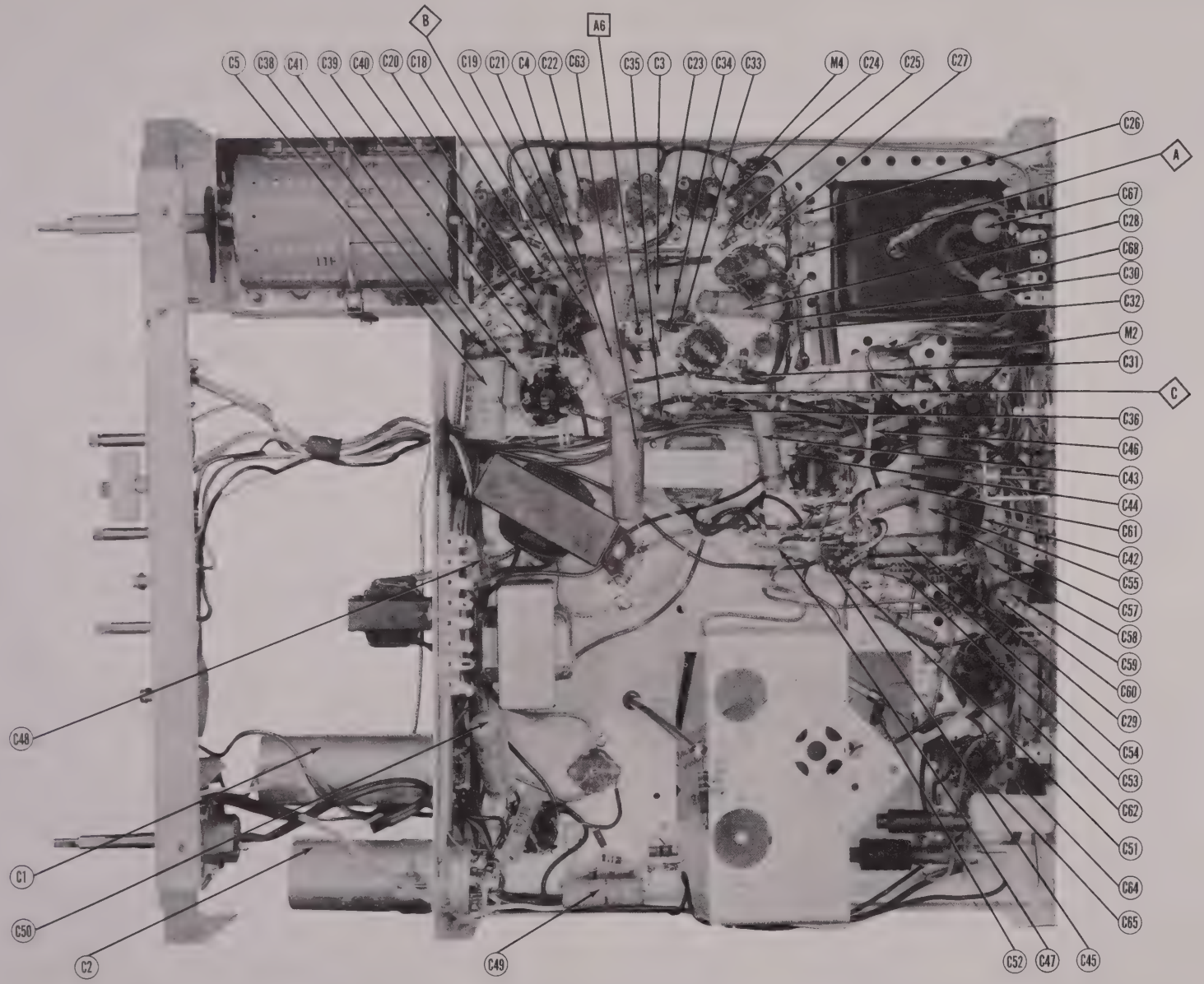
MAJESTIC MODELS 17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710
ALTERNATE RATIO DET.-AF AMP CIRCUIT
ALTERNATE HORIZ. OUTPUT CIRCUIT
ALTERNATE FOCUS & DEFL. CIRCUIT USED WITH 19" TUBES

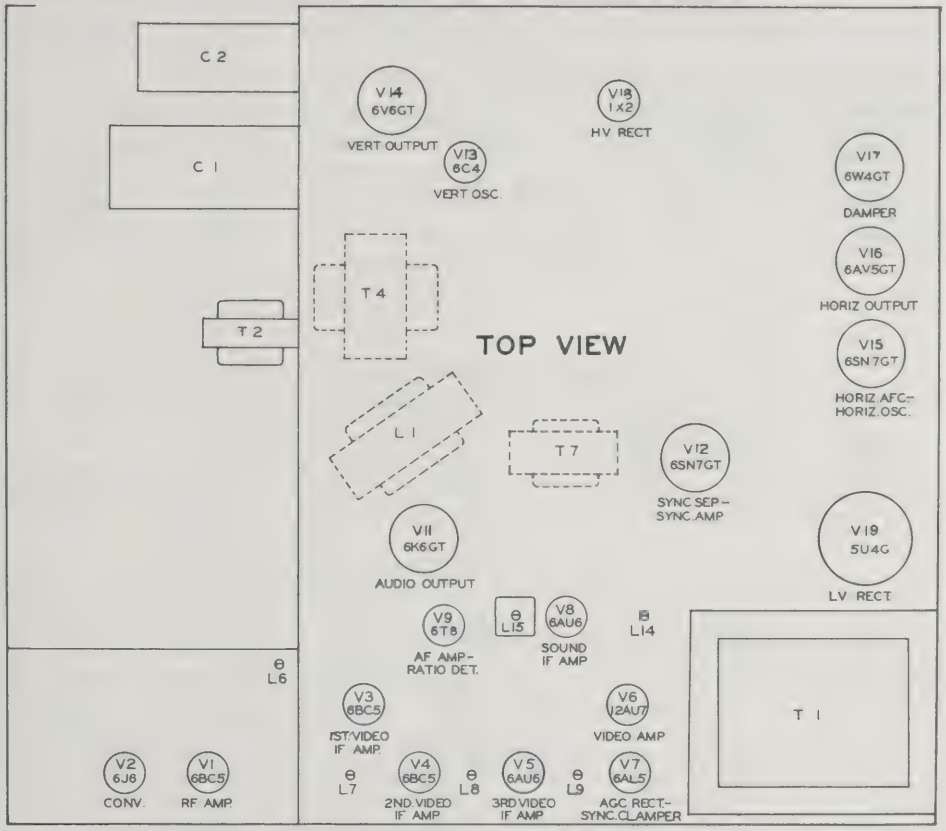
MAJESTIC MODELS 17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710

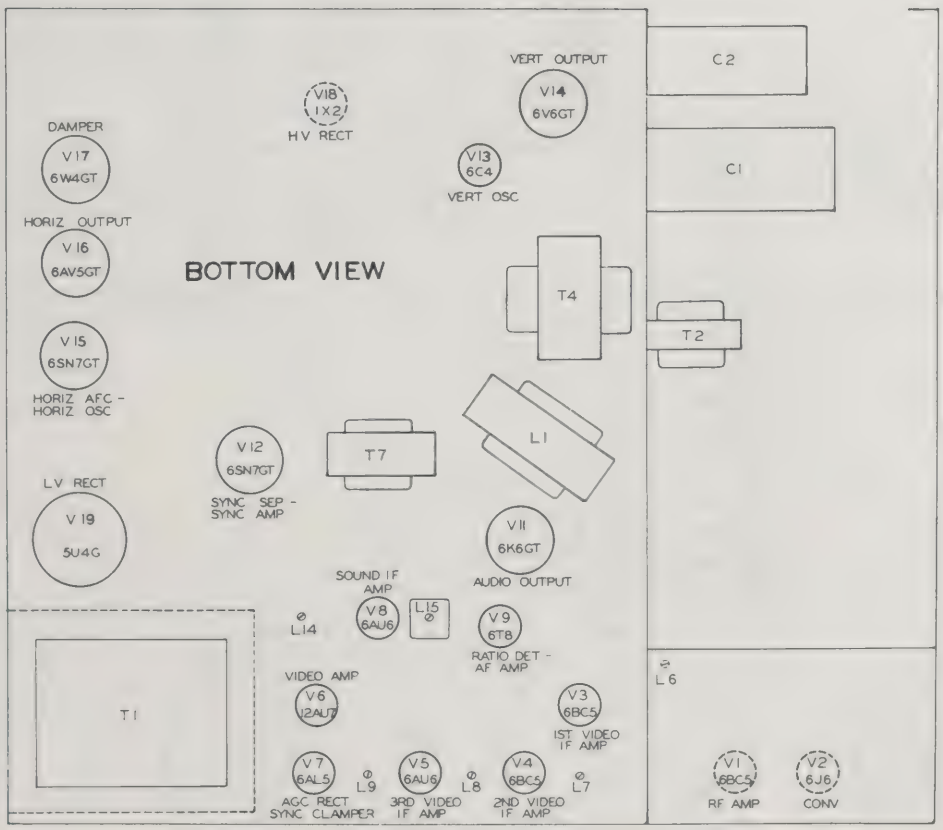


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the receiver is to be aligned with the picture tube removed, the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Turn the contrast control fully counter-clockwise.
Connect the negative terminal of a 3 volt battery to the junction of R17 and C18A. Connect the positive terminal to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -1.5 volt reading.
2.	"	"	22.3MC	"	"	A2	"
3.	"	"	24.1MC	"	"	A3	"
4.	"	"	24.9MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23MC (10MC SWP)	20.25MC 22MC 24.75MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1 with markers as shown. If necessary, slightly retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis . The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to Point A . Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtoothe voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to Point A. Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizing capacitor C4. Adjust for maximum amplitude and symmetry as per figure 2.
7.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A7	Reconnect capacitor C4. Adjust A7 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A6 for max. amplitude and straightness of crossover lines.

RF ALIGNMENT (STANDARD COIL TUNER)

Remove the 3 volt battery from the junction of R17 and C18A and connect a short from the same point to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistor	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	209.75MC 205.25MC	12	Vert. amp. to Point (E) Low side to chassis.	A8, A9, A10	Adjust for response curve similar to figure 4 with markers above 90% response.
9.	"	"	213MC (10MC SWP)	125.75MC 211.25MC	13	"		Check all response curve on all channels. If markers fall below 70% on any one channel a compromise adjustment of A8, A9 and A10 will be necessary.
			201MC (10MC SWP)	203.75MC 199.25MC	11			
			195MC (10MC SWP)	197.75MC 193.25MC	10			
			189MC (10MC SWP)	191.75MC 187.25MC	9			
			183MC (10MC SWP)	185.75MC 181.25MC	8			
			177MC (10MC SWP)	179.75MC 175.25MC	7			
			85MC (10MC SWP)	87.75MC 83.25MC	6			
			79MC (10MC SWP)	81.75MC 77.25MC	5			
			69MC (10MC SWP)	71.75MC 67.25MC	4			
			63MC (10MC SWP)	65.75MC 61.25MC	3			
			57MC (10MC SWP)	59.75MC 55.25MC	2			

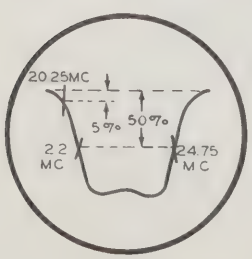


FIG.1

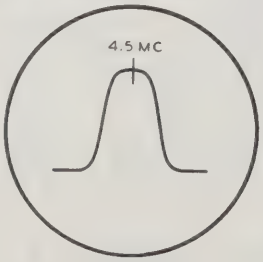


FIG. 2

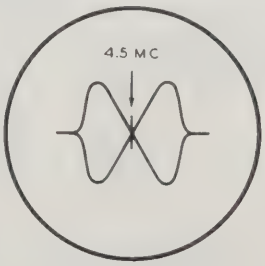


FIG. 3

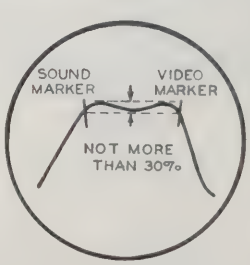


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (STANDARD COIL TUNER)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seem to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them using A-11. It should be noted that this is an all channel oscillator circuit adjustment, and should not be adjusted for any individual channel. If adjustment of A-11 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channels that is off frequency. The individual channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the 3 volt battery as in Video IF Alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	215.75MC 211.25MC	13	Vert. amp. to Point (A). Low side to chassis.	A12	Adjust to place sound marker at 5% as shown in figure 5. The video marker should be at 50%.
			207MC (10MC SWP)	209.75MC 205.25MC	12		A13	
			201MC (10MC SWP)	203.75MC 199.25MC	11		A14	
			195MC (10MC SWP)	197.75MC 193.25MC	10		A15	
			189MC (10MCSWP)	191.75MC 187.25MC	9		A16	
			183MC (10MC SWP)	185.75MC 181.25MC	8		A17	
			177MC (10MC SWP)	179.75MC 175.25MC	7		A18	
			85MC (10MC SWP)	87.75MC 83.25MC	6		A19	
			79MC (10MC SWP)	81.75MC 77.25MC	5		A20	
			69MC (10MC SWP)	71.75MC 67.25MC	4		A21	
			63MC (10MC SWP)	65.75MC 61.25MC	3		A22	
			57MC (10MC SWP)	59.75MC 55.25MC	2		A23	

OSCILLATOR ALIGNMENT (SARKES TARZIAN TUNER)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the 3 volt battery as outlined in VIDEO IF ALIGNMENT.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	215.75MC 211.25MC	13	Vert. amp. to Point (A). Low side to chassis.	A24	Adjust to place sound marker at 5% response as shown in figure 5. The video marker should be at 50% response.
12.	"	"	207MC (10MC SWP)	209.75MC 205.25MC	12	"		Check response curve on all high channels to see if markers can be properly placed well within the range of the fine tuning control. If not, a compromise adjustment of A24 will be necessary.
			201MC (10MC SWP)	203.75MC 199.25MC	11			
			195MC (10MC SWP)	197.75MC 193.25MC	10			
			189MC (10MC SWP)	191.75MC 187.25MC	9			
			183MC (10MC SWP)	185.75MC 181.25MC	8			
			177MC (10MC SWP)	179.25MC 175.25MC	7			
13.	"	"	85MC (10MC SWP)	87.75MC 83.25MC	6		A25	Adjust to place sound marker at 5% of response as shown in figure 5. The video marker should be at 50% response.
14	"	"	79MC (10MC SWP)	81.75MC 77.25MC	5			Check response curve on all channels to see if marker can be placed well within the range of the fine tuning control. If not, a compromise adjustment of A25 will be necessary.
			69MC (10MC SWP)	71.75MC 67.25MC	4			
			63MC (10MC SWP)	65.75MC 61.25MC	3			
			57MC (10MC SWP)	59.75MC 55.25MC	2			

THE RF PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

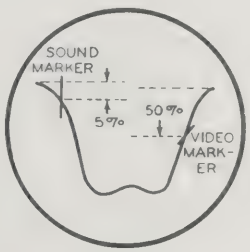


FIG. 5

MAJESTIC MODELS 17DA, GA, HA, 120, 121, B, 141, B, C, 142, B, 160, B, 162, 163, 170, 902, 903, 910, 911, 1400, B, 1401, 1600, B, 1605, B, 1610, B, 1710

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.4VDC	0V	6.3VAC	0V	90VDC	90VDC	0V		
V 2	6J6	85VDC	70VDC	6.3VAC	0V	-1.7VDC	§-4.4VDC	0V		
V 3	6BC5	-.4VDC	.6VDC	0V	6.3VAC	100VDC	100VDC	.6VDC		
V 4	6BC5	-.4VDC	.4VDC	0V	6.3VAC	105VDC	105VDC	.4VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	107VDC	107VDC	1.2VDC		
V 6	12AU7	105VDC	-.1VDC	3.8VDC	6.3VAC	6.3VAC	130VDC	-.2VDC	0V	0V
V 7	6AL5	0V	-3VDC	6.3VAC	0V	0V	0V	-.6VDC		
V 8	6AU6	0V	0V	0V	6.3VAC	210VDC	70VDC	.5VDC		
V 9	6T8	-.6VDC	-1VDC	-.6VDC	6.3VAC	0V	-.6VDC	0V	-.8VDC	50VDC
V 10	NOT USED IN ALL MODELS									
V 11	6K6GT	0V	0V	195VDC	204VDC	0V	215VDC	6.3VAC	13VDC	
V 12	6SN7GT	.1VDC	110VDC	3.3VDC	-3VDC	155VDC	3.2VDC	6.3VAC	0V	
V 13	6C4	170VDC 40VDC	0V	0V	6.3VAC	170VDC 40VDC	-40VDC -2.4VDC	0V		
V 14	6V6GT	0V	0V	260VDC 230VDC	260VDC 230VDC	0V	215VDC	6.3VAC	30VDC 8VDC	
V 15	6SN7GT	-1.8VDC -2.5VDC	170VDC 130VDC	4.3VDC -.8VDC	-55VDC	165VDC	0V	0V	6.3VAC	
V 16	6AV5GT	-18VDC	6.3VAC	0V	0V	*	0V	0V	135VDC	
V 17	6W4GT	215VDC	0V	240VDC	0V	215VDC	0V	¶	¶	
V 18	1X2	* DO NOT MEASURE								
V 19	5U4G	0V	275VDC	0V	295VAC	255VDC	295VAC	255VDC	275VDC	
V 20	16GP4B	¶	135VDC	PIN 10 225VDC	PIN 240VDC	11 120VDC	PIN 12 ¶			

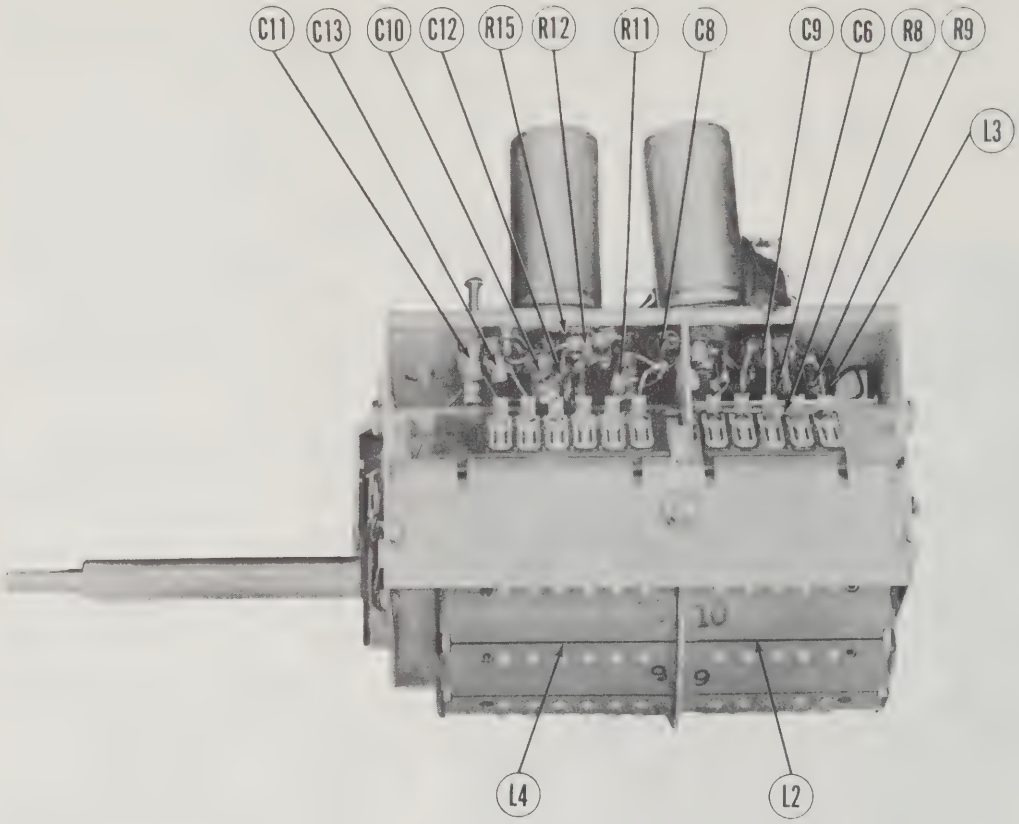
FOCUS CONTROL COUNTERCLOCKWISE
TV-PHONO SWITCH IN TV POSITION
§ TAKEN WITH VACUUM TUBE VOLTMETER
¶ 6.3VAC MEASURED ACROSS FILAMENTS
* DO NOT MEASURE

RESISTANCE READINGS

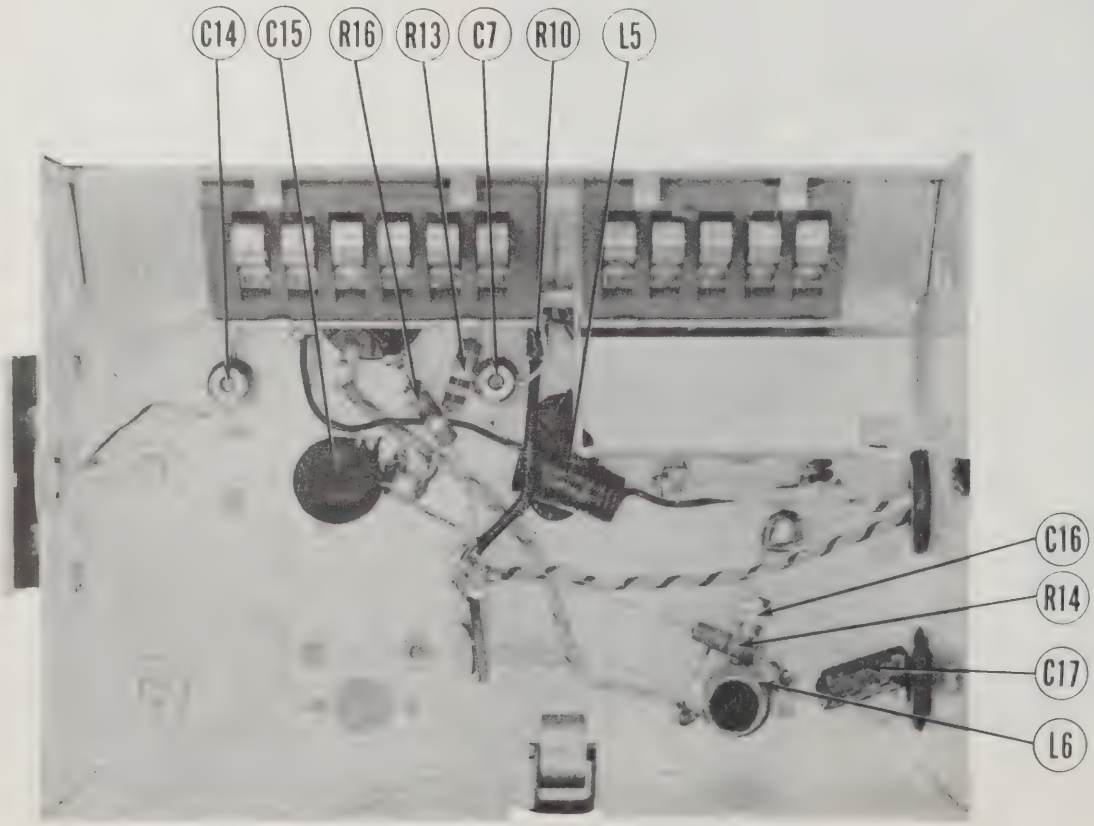
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.5Meg	0Ω	.1Ω	0Ω	†5.3KΩ	†5.3KΩ	0Ω		
V 2	6J6	†7.8KΩ	†18KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6BC5	1.5Meg	82Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 4	6BC5	1.5Meg	100Ω	0Ω	.1Ω	†3.2KΩ	†3.2KΩ	100Ω		
V 5	6AU6	.4Ω	0Ω	0Ω	.1Ω	†3.1KΩ	†3.1KΩ	150Ω		
V 6	12AU7	†20KΩ	6.5KΩ	1.5KΩ	.1Ω	.1Ω	†5.1KΩ	1Meg	0Ω	0Ω
V 7	6AL5	0Ω	4.7Meg	.1Ω	0Ω	0Ω	0Ω	680KΩ		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1.3KΩ	†25KΩ	100Ω		
V 9	6T8	Inf.	18KΩ	Inf.	.1Ω	0Ω	Inf.	0Ω	10Meg	†475KΩ
V 10	NOT USED IN ALL MODELS									
V 11	6K6GT	Inf.	0Ω	†1.2KΩ	†750Ω	470KΩ	†270Ω	.1Ω	470Ω	
V 12	6SN7GT	1Meg	†22KΩ	560Ω	4.7Meg	▲150KΩ	6.8KΩ	.1Ω	0Ω	
V 13	6C4	▲470KΩ ▲3Meg	0Ω	0Ω	.1Ω	▲470KΩ ▲3Meg	1.5Meg 2.5Meg	0Ω		
V 14	6V6GT	Inf.	0Ω	†770Ω	†770Ω	6.8Meg	†300Ω	.1Ω	5.2KΩ 220Ω	
V 15	6SN7GT	800KΩ	†45KΩ †50KΩ	360KΩ	280KΩ	†45KΩ	0Ω	0Ω	.1Ω	
V 16	6AV5GT	1 Meg	.1Ω	0Ω	Inf.	▲65Ω	Inf.	0Ω	†5.9KΩ	
V 17	6W4GT	†300Ω	Inf.	†620KΩ	Inf.	†300Ω	Inf.	†72Ω	†72Ω	
V 18	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲515Ω
V 19	5U4G	Inf.	35KΩ	Inf.	20Ω	†72Ω	20Ω	†72Ω	35KΩ	
V 20	16GP4B	†72Ω	†5.1KΩ	PIN 10 ▲150KΩ	PIN 500KΩ	11 600KΩ	PIN 12 †72Ω			

FOCUS CONTROL COUNTERCLOCKWISE
TV-PHONO SWITCH IN TV POSITION
† MEASURED FROM PIN 2 OF V19
▲ MEASURED FROM PIN 3 OF V17

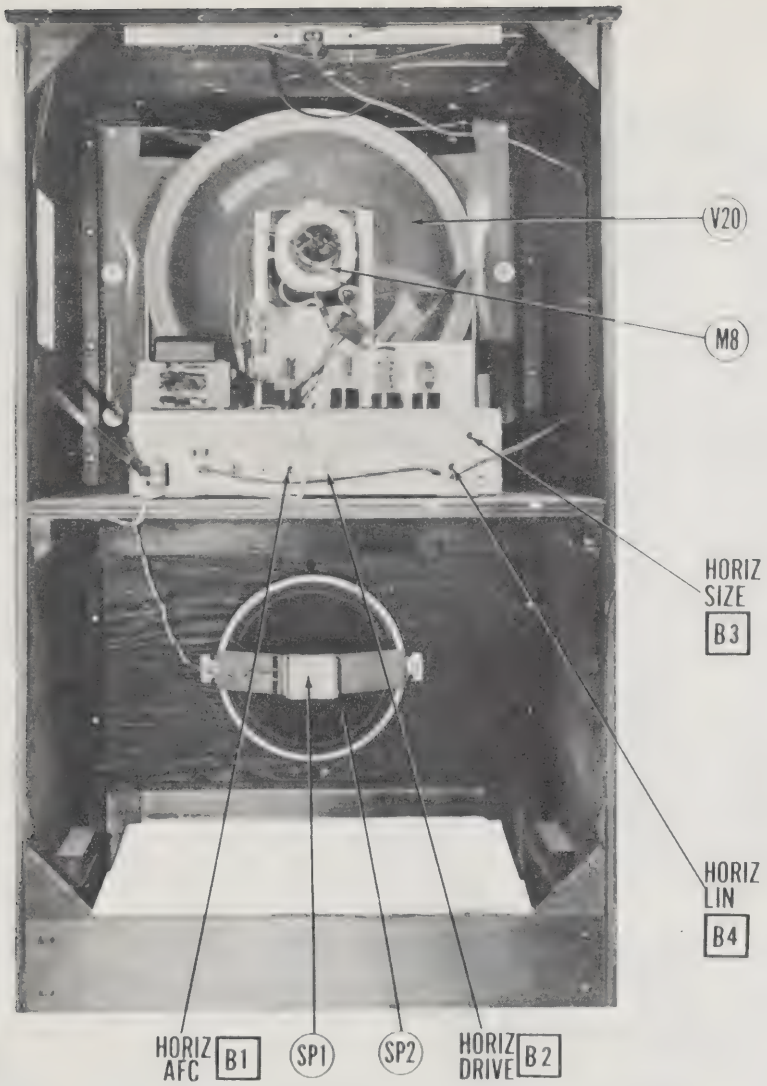
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Turn the contrast control to the mid-position of its range.

Turn the horizontal hold control fully clockwise. Adjust the horizontal frequency slug (B1) until picture synchronizes, then turn B1 counter-clockwise until it just falls out of sync.

Adjust the horizontal drive trimmer (B2) for the best compromise between brightness and horizontal linearity. If any white vertical lines appear in picture adjust B2 until they disappear.

Adjust the horizontal size slug (B3) until picture fills the mask.

Adjust the horizontal linearity slug (B4) for best linearity of inner circles of test pattern. A slight readjustment of B2 may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove two 1/4" hex head screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker lead.
5. Remove interlock.
6. Remove six 1/4 X 20 bolts holding chassis in cabinet. Remove chassis.
7. Remove two 5/16" hex nuts from speaker. Remove speaker.

NOTE : FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6AG5	6AG5	7BD	
C	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter t	6J8	6J8	7BF	
V3	1st. Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd. Video IF Amp.	6BC5	6BC5	7BD	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6A	Video Amplifier	12AU7	12AU7	9A	
B	Video Amplifier	12BH7	12BH7	9A	
V7	AGC Rectifier-Sync. Clamp.	6AL5	6AL5	6BT	
	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector-AF Amplifier	6T8	6T8	9E	
B	Ratio Detector	6AL5	6AL5	6BT	
V10A	AF Amplifier	6AT6	6AT6	7BT	
B	AF Amplifier	6AV6	6AV6	7BK	Alternate
V11	Audio Output	6K6GT	6K6GT	7S	
V12A	Sync. Seperator-Sync. Amplifier	6SN7GT	6SN7GT	8BD	
B	Sync. Separator-Sync. Amplifier	12AU7	12AU7	9A	
V13	Vert. Oscillator	6C4	6C4	6BG	
V14A	Vert. Output	6V6GT	6V6GT	7AC	Used in chassis series 100, 101, 103, 105, some 102.
B	Vert. Output	6W6GT	6W6GT		Used only in series 102.
C	Vert. Output	6K6GT	6K6GT	7S	Used in series 99.
V15	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6AV5GT	6AV5GT	5CK	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1X2	1X2	7CB	
V19	LV Rectifier	5U4G	5U4G	5T	Models 1610
V20A	Picture Tube	18GP4B	16GP4B	12D	Models 1605, 1610
B	Picture Tube	16GP4	16GP4	12D	Models 160, 162, 1600
C	Picture Tube	16KP4	16KP4	12D	Models 160, 162, 1600
D	Picture Tube	18TP4	16TP4	12D	Models 160, 162, 1600
E	Picture Tube	16RP4	16RP4	12D	Models 120, 121
F	Picture Tube	13LP4	13LP4	12D	Models 141, 142, 1400, 1401
G	Picture Tube	14BP4	14BP4	12D	Models 141, 142, 1400, 1401
H	Picture Tube	14DP4	14DP4	12D	Models 141, 142, 1400, and 1401
I	Picture Tube	14CP4	14CP4	12D	Models 17DA, 17GA, 17HA, 1710
J	Picture Tube	17AP4	17AP4	12D	Models 17DA, 17GA, 17HA, 1710
K	Picture Tube	17BP4	17BP4	12D	Models 902, 903, 910, 911
L	Picture Tube	19AP4	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	C-5.435-1	AFH88J16B		UPT4445V		TVL-3764	▲Filter
B	100	50				10			■Vert. Output Cath.
C	40	450							▲Filter
C2A	8	450	C-5.435-2	AFH862J4A		UPT44145		TVL-4736	▲Decoupling
B	40	450				V12			■Decoupling
C	20	25							▲Output Cath. Filter
D	40	450							
C3	4	450	B-	PRS450/4		BR445		TVA-1702	V. Amp. Dec.
C4	4	50	C-5.430-1	PRSI50/4		BR550		TVA-1303	Stabilizing Cap.
C5	4	450	B-5.418	PRS450/4		BR445		TVA-1702	Output Decoupling
C6	3-9								Variable Trimmer
C7	.5-3				829-3				Variable Trimmer
C8	130			SI120	D6-121		GP2K-120	19C29	RF Amp. Dec.
C9	1000			SI1000	D6-102		GP24-001	19C1	RF Amp. Fil.
C10	100			SI100N750	TCN-100		N750L-100	29C16	RF Coupling
C11	.5-3				829-3				Variable Trimmer
C12	30			SI20NPO	TCZ-20		NPOK-20		Osc. Grid Cap
C13	10			SI10N740	TCN-10		N750K-10	19C4	Fixed Trimmer
C14	.5-3				829-3				Variable Trimmer
C15A	1000		BPD-2X001	DD-2-102			812-2X001	29C7	RF Bypass
B	1000								Conv. Fil. Bypass
C16	10		SI10NPO	TCZ-10		NPOK-10		19C3	Fixed Trimmer
C17	120	500	SI120	DC-121		GP2K-120		19C29	IF Coupling
C18A	5000		B-4.125-1	BPD-2X004	DD-2-502	ID5D5	822-2X004	36C21	AGC Filter
B	5000					ID5D5			1st V. IF Dec.
C19	5000		B-4.115-1	BPD-005	DD-502	ID5D5	811-005	29C1	RF Bypass
C20	.1	400	D-3.100-23	P488-1	DF-104	PTE4P1		4TM-P1	AGC Filter
C21A	5000		B-4.125-1	BPD-2X004	DD-2-502	ID5D5	822-2X004	36C21	RF Bypass
B	5000					ID5D5			2nd V. IF Dec.
C22	4.7		C-4.111-6	SI4.7NPO	TCE-4.7		NPOK-4.7		Fixed Trimmer
C23A	5000		B-4.125-1	BPD-2X004	DD-2-502	ID5D5	822-2X004	36C21	3rd V. IF Dec.
B	5000					ID5D5			3rd V. IF Cath.
C24	100		C-4.109-10	SIL00	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C25	5000		B-4.115-1	BPD-005	DD-502	ID5D5	811-005	29C1	DAGC Dec.
C26	10		C-4.109-16	SI10	D6-100	5W5Q1	GP1K-10	19C3	V. Diode Filter
C27	220		C-4.109-11	SI220	D6-221	5W5T25	GP2K-220	19C13	V. Amp. Cath.
C28	.05	400	D-3.100-19	P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C29	.05	400	D-3.100-19	P488-05	DF-503	PTE4S5		4TM-S5	Pic. Tube Cath. ‡
C30	2.2		C-4.111-4		TCZ-2.2				S. IF Coupling
C31	39	500	D-4.104-21	1469-00001	TCZ-39	5R5Q4	GP1K-49	MS-44	S. IF Coupling
C32	4.7		C-5.111-6	SI4.7NPO	TCZ-4.7		NPOK-4.7		Fixed Trimmer
C33A	5000		B-4.125-1	BPD-2X004	DD-2-502	ID5D5	822-2X004	36C21	S. IF Screen
B	5000					ID5D5			S. IF Cath.
C34	5000		B-4.115-1	BPD-005	DD-502	ID5D5	811-005	29C1	S. IF Plate Dec.
C35	1500		D-4.108-12	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Diode Load Cap
C36	1500		B-4.115-1	SI1500	D6-152	1W5D15	GP2L-0015	29C8	De-Emphasis
C37	.05	400	D-3.100-18	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C38	.005	600	D-3.100-4	P688-005	D6-502	PTE8D5	811-005	6TM-D5	Audio Coupling
C39	680		C-4.109-5	SI680	D6-681	1W5T7	GP2K-680	19C17	AF Amp. Grid
C40	.022	600	D03.100-12	P688-022	DF-203	PTE6S2		6TM-S22	Audio Coupling
C41	.005	600	D-3.100-4	P688-005	D6-502	PTE8D5	811-005	6TM-D5	Output Plate
C42	1500		D-4.108-12	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Fixed Trimmer
C43	.05	400	D-3.100-19	P488-05	DF-503	PTE4S5		4TM-S5	Sync Coupling
C44	220		C-4.109-11	SI220	D6-221	5W5T25	GP2K-220	19C13	Sync Coupling
C45	390	500	D-4.104-63	1469-0004	D6-391	5R5T4	GP2K-390	MS-34	Sync Amp. Cath.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	.05	600	D-3.100-20	P688-05	DF-503	PTE6S5		6TM-S5	Sync Amp. Plate
C47A	2000		10.101 †	P688-002	†	PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000			P488-005		PTE6D5	811-005	6TM-D5	Integrator Net
C48	4700	400	D-4.105-24	1467-005	D6-472	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid
C49	.047	600	D-3.100-19	P688-047		PTE6S5		6TM-S47	Vert. Discharge
C50	.1	600	D-3.100-23	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C51	68	500	D-4.104-93	SI68	D6-680	5W5Q7	GP1K-68	19C10	Hor. Sync Coupling
C52	1.5	2000	D-4.108-17						Hor. Feedback
C53	.002	600	D-3.100-2	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Hor. Sync Coupling
C54	.002	600	D-3.100-2	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	AFC Filter
C55	.2	400	D-3.100-40	P488-22		GT4P2		4TM-P22	AFC Filter
C56	.05	400	D-3.100-19	P488-05	DF-503	PTE4S5		4TM-S5	Hor. AFC Plate
C57	330	500	D-4.104-59	1469-00035	D6-331	5R5T3	GP2K-330	MS-33	Hor. Osc. Grid
C58	1500	500	D-4.105-10	1467-0015	D6-152	1W5D15	GP24-0015	1FM-215	Hor. Discharge
C59	560	500	D-4.104-70	SI560	D6-560	5R5T5	GP2K-560	MS-35	Hor. Sweep Coupling
C60	.05	600	D-3.100-2	P688-05	DF-503	PTE6S5		6TM-S5	Hor. Output Screen
C61	.035	600	D-3.100-46	P688-033					Damper Filter
C62	.05	600	D-3.100-20	P688-05		PTE6S5		6TM-S5	Damper Filter
C63	.2	400	D-3.100-40	P488-22		GT4P2		4TM-P22	Hor. Sweep Coupling
C64	2200	500							Fixed Trimmer *
C65	30	2000	B-4.127-1						Hor. Sweep Coupling
C66	500	20000	B-4.128	HV20C	TV3-502				H. V. Filter
C67	5000		B-4.115-1	BPD-005	DD-502	1D5D5	811-005	29C1	Line Filter
C68	5000		B-4.115-1	BPD-005	DD-502	1D5D5	811-005	29C1	Line Filter
C69	.25	800	D-3.100-32	684-25		GT6P25		6TM-P25	Vert. Output Plate *
C70	.25	200	D-3.100-30	P488-25		GT2P25		2TM-P25	Fixed Trimmer *
C71	.05	600	D-3.100-19	P688-05	DF-503	PTE6S5		6TM-S5	Decoupling *
C72	1	150	D-3.100-53	484-1.0		GT2W1		2TM-M1	Hor. Output Cath. §

† Items C47A, C47B, C47C, R64A, R64B, and R64C are combined into one unit.
* Not used in all models
‡ Some models use .2 MFD in this application.
§ Used only on 99-100 Series.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	C-8.230-1		RTV-233		Contrast Control - Panel
B	1Meg	½					Volume Control and SW - Rear
R2	2250Ω	4	C-8.221		RTV-9		Focus Control - Wire Wound
R3	5000Ω	1	C-8.206-6		43-5000		Vert Linearity Control - Wire Wound
R4A	2.5Meg	½	C-8.219-5	Q11-239	AG-84-5	B83	Vertical Size Control
B	Shaft		Not Req *	Not Req	FKS-1/4	Not Req	Attach to R4A Per Instructions
R5A	1Meg	½	C-8.229-2	Q11-137	AG-81-5	B-69	Vertical Hold Control
B	Shaft		Not Req	Not Req	RS-3	Not Req	Attach to R5A Per Instr.
R6A	100KΩ	½	C-8.229-3	Q11-128	AG-49-5	B-40	Brightness Control
B	Shaft		Not Req	Not Req	RS-2	Not Req	Attach to R6A Per Instr.
R7A	25KΩ	½	C-8.229-1	Q41-120	AG-40-5	B-26	Horizontal Hold Control
B	Shaft		Not Req	Not Req	RS-2	Not Req	Attach to R7A Per Instr.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES ▲LL RESISTORS ±10% UNLESS OTHERWISE STATE
R8	3900Ω	1		BTS-3900	Antenna Coil Shunt
R 9	47KΩ	20% 1		BTS-47K	AGC Network
R 10	2200Ω	20% 1		BTS-2200	RF Amp Decoup
R 11	10KΩ	1			RF Coil Shunt
R 12	4700Ω	20% 1			Mixer Grid
R 13	220KΩ	20% 1			Mixer Grid
R 14	15KΩ	20% 1			Mixer Plate
R 15	10KΩ	1			Osc Grid
R 16	4700Ω	1		BTS-4700	Osc Plate
R 17	330Ω	1	D-7.101-227	BTS-330	AGC Network
R 18	4700Ω	20% 1	D-7.102-94	BTS-4700	1st Video IF Amp Grid
R 19	82Ω	1	D-7.101-235	BTS-82	1st Video IF Amp Cathode
R 20	100Ω	20% 1	D-7.101-226	BTS-100	1st Video IF Amp Decoup
R 21	8200Ω	1	D-7.101-55	BTS-8200	2nd Video IF Transformer Shunt
R 22	100Ω	20% 1	D-7.101-226	BTS-100	2nd Video IF Amp Cathode
R 23	100Ω	20% 1	D-7.101-226	BTS-100	Decoup
R 24	10KΩ	5% 1	D-7.101-58		3rd Video IF Transformer Shunt
R 25	150Ω	1	D-7.101-204	BTS-150	3rd Video IF Amp Cathode
R 26	100Ω	20% 1	D-7.101-226	BTS-100	Decoup
R 27	8200Ω	1	D-7.101-55	BTS-8200	Video Det. Diode Load
R 28	12KΩ	1	D-7.101-62	BTS-12K	Video Peaking Coil Shunt
R 29	680KΩ	1	D-7.101-134	BTS-680K	AGC Load
R 30	820KΩ	1	D-7.101-138	BTS-820K	AGC Network
R 31	3300Ω	20% 1	D-7.101-98	BTS-3300	1st Video Amp Plate
R 32	10KΩ	1	D-7.101-58	BTS-10K	Video Peaking Coil Shunt
R 33	22KΩ	20% 1	D-7.102-81	BTA-47K	1st Video AmpPlate Decoup } See Note 4
R 34	22KΩ	20% 1	D-7.102-81		1st Video AmpPlate Decoup }
R 35	1Meg	20% 1	D-7.101-142	BTS-1Meg	2nd Video Amp Grid
R 36	3300Ω	2	D-7.103-108	BTB-3300	2nd Video Amp Cathode
R 37	1800Ω	2		BTB-1800	2nd Video Amp Plate Decoup - Wire Wound
R 38	33KΩ	20% 1	D-7.101-80	BTS-33K	Voltage Divider
R 39	150KΩ	1		BTA-150K	Voltage Divider
R 40	2750Ω	7	B-6.211-1		Voltage Divider - Wire Wound
R 41	100Ω	20% 1	D-7.101-226	BTS-100	Decoup
R 42	100KΩ	1	D-7.101-100	BTS-100K	Voltage Divider - See Note 8
R 43	470KΩ	20% 1	D-7.101-129	BTS-470K	Picture Tube Cathode
R 44	47KΩ	1	D-7.101-87		Sound IF Amp Grid
R 45	100Ω	20% 1	D-7.101-226	BTS-100	Sound IF Amp Cathode
R 46	22KΩ	20% 1	D-7.102-81	BTA-47K	Sound IF Amp Screen } See Note 5
R 47	22KΩ	20% 1	D-7.102-81		Sound IF Amp Screen }
R 48	1000Ω	20% ½	D-7.101-17	BTS-1000	Sound IF Amp Plate
R 49	47KΩ	1	D-7.101-87	BTS-47K	Voltage Divider
R 50	220Ω	20% ½	D-7.101-234	BTS-220	Balancing
R 51	15KΩ	20% 1	D-7.101-66	BTS-15K	De- Emphasis
R 52	18KΩ	1	D-7.101-69	BTS-18K	Ratio Det. Diode Load
R 53	10Meg	20% ½	D-7.101-192	BTS-10Meg	AF Amp Grid
R 54	470KΩ	20% ½	D-7.101-129	BTS-470K	AF Amp Plate
R 55	470KΩ	20% ½	D-7.101-129	BTS-470K	Output Grid
R 56	470Ω	1		BTA-470	Output Cathode - See Note 1
R 57	470Ω	1		BTA-470	Output Decoup
R 58	1Meg	20% ½	D-7.101-142	BTS-1Meg	Sync Sep. Grid - See Note 7
R 59	560Ω	1	D-7.101-6	BTS-560	Sync Sep. Cathode
R 60	22KΩ	20% 1	D-7.102-81	BTA-22K	Sync Sep. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES
R 61	4.7Meg	20% ½	D-7.101-179	BTS-4.7Meg	Sync Amp Grid
R 62	6800Ω	20% ½	D-7.101-52	BTS-6800	Sync Amp Cathode
R 63	150KΩ	20% ½	D-7.101-107	BTS-150K	Sync Amp Plate
R 64A	22KΩ	½	† 10.101		Integrator
B	8200Ω	½			Integrator
C	8200Ω	½			Integrator
R 65	1.5Meg	½	D-7.101-148	BTS-1.5Meg	Vertical Osc Grid
R 66	470KΩ	20% ½	D-7.101-129	BTS-470K	Vertical Osc Plate
R 67	8000Ω	½			Vertical Peaking - See Note 2
R 68	6.8Meg	20% ½	D-7.101-185	BTS-6.8Meg	Vertical Output Grid
R 69	220Ω	20% ½	D-7.101-234	BTS-220	Vertical Output Cathode
R 70	3.3Meg	½	D-7.101-171	BTS-3.3Meg	Voltage Divider
R 71	680KΩ	½	D-7.101-134	BTS-680K	Horizontal AFC Grid
R 72	180KΩ	½	D-7.101-111	BTS-180K	Horizontal AFC Cathode
R 73	180KΩ	½	D-7.101-111	BTS-180K	Horizontal AFC Cathode
R 74	47KΩ	20% 1	D-7.102-94	BTA-47K	Horizontal AFC Plate
R 75	8000Ω	½			Horizontal AFC Filter - See Note 2
R 76	100KΩ	½	D-7.101-100	BTS-100K	Voltage Divider
R 77	100KΩ	5% ½	D-7.101-99	BTS-100K-5%	Horizontal Osc Grid
R 78	22KΩ	1	D-7.102-81	BTA-47K	Horizontal Osc Plate Decoup See Note 6
R 79	22KΩ	1	D-7.102-81		Horizontal Osc Plate Decoup
R 80	1000Ω	½	D-7.101-17	BTS-1000	Decoup
R 81	8200Ω	½	D-7.101-55	BTS-8200	Horizontal Osc Transformer
R 82	100Ω	20% ½	D-7.101-226	BTS-100	Parasitic Supp.
R 83	1Meg	20% ½	D-7.101-142	BTS-1Meg	Horizontal Output Grid
R 84	5600Ω	2	D-7.103-118	BTB-5600	Horizontal Output Screen
R 85	68Ω	1			Voltage Divider - See Note 3
R 86	1000Ω	20% 1	D-7.102-24	BTA-1000	Horizontal Linearity Coil Shunt
R 87	470KΩ	20% ½	D-7.101-129	BTS-470K	Feedback Network
R 88	470KΩ	20% ½	D-7.101-129	BTS-470K	Feedback Network
R 89	470KΩ	20% ½	D-7.102-137		HV Filter
R 90	470KΩ	1	D-7.102-137	BTA-470K	Voltage Divider
R 91	150KΩ	20% ½	D-7.101-108	BTS-150K	Voltage Divider
R 92	470Ω	7	C-8.215-5		Focus Coil Shunt - Wire Wound
R 93	15Ω	½	C-8.212-3		Parasitic Suppressor - See Note 3
R 94	100KΩ	½	D-7.101-100	BTS-100K	Isolation - See Note 3
R 95	3.3Ω	½	C-8.212-1	BW-½-3.3	HV Rectifier Filament - Wire Wound - See Note 3
R 96	47KΩ	½	D-7.102-95	BTA-47K	Vertical Output Screen - See Note 3
R 97	10KΩ	½	D-7.101-59	BTS-10K	Decoupling - See Note 3
R 98	1000Ω	2	D-7.102-87	BTB-1000	Focus Coil Shunt - See Note 3
R 99	220Ω	1	D-7.101-234	BTS-220	2nd Video Amp. Cathode - See Note 3
R100	150KΩ	½	D07.101-108	BTS-150K	DC Restorer Diode Load - See Note 3
R101	250Ω	10	C-8.215-4	1 3/4A-250	Horizontal Output Cathode - See Note 3

† Items R64A, R64B, R64C, C47A, C47B, and C47C are combined into one unit
Note 1 Some models use 560Ω Resistor in this application
Note 2 Some models use 8200Ω Resistor in this application
Note 3 Not used in all models
Note 4 Some models may use a single 47KΩ 1watt Resistor in place of R33 and R34
Note 5 Some models may use a single 47KΩ 1 watt Resistor in place of R46 and R47
Note 6 Some models may use a single 47KΩ 1 watt Resistor in place of R78 and R79
Note 7 Some models use 68KΩ Resistor in this application
Note 8 Some models use 47KΩ Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ⑤1.6A	600VCT .220ADC	5VAC ⑤3A	6.3VAC ⑤1.8A SEC.4 6.3VAC ⑥6A	D-8.252		P-3070	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC. RESISTANCE PRI.	RATING: DC. RESISTANCE SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	160Ω	1.3KΩ	C9.230-4				Vert Block Osc Trans.
T3	495Ω	22Ω	C9.253-1 ④		HVO-6		Horizontal Output Trans.
	Tap 42Ω	Tap 17Ω					
T4	700Ω	7.5Ω	C9.228-5	A-8112	A-3036	TSO-5	Vert Output Trans.
T5A	173		C9.254 ⑦		MD-70		Horizontal Deflection Coil
B	70Ω				MD-70		Vert Deflection Coil
T6	370Ω		C9.234-4		MF-3		Focus Coil

① Drill one new mounting hole
④ Used in Series 101-102
C9.241 used in Series 99-100
⑦ Used in Series 100-102
C9.240 used in Series 99

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	7.8KΩ	4.1Ω	450Ω	.7Ω	C-9.225-3	A3878 ①	A3020 ①	RO-16 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS: FIELD. RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	4.1Ω	E30.328 ⑤ E30.326 ⑥	10J12	10A4A	⑤ Used in Consoles ⑥ Used in Table models
	CONE DIA.	V. C. DIA.				
SP2	9 1/8	1"				

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	220MA	72Ω	2.5H	C-9.237-3	C-2325 ①	C2991	TR3300 ①	① Drill one new mounting hole

COILS (RF-IF)

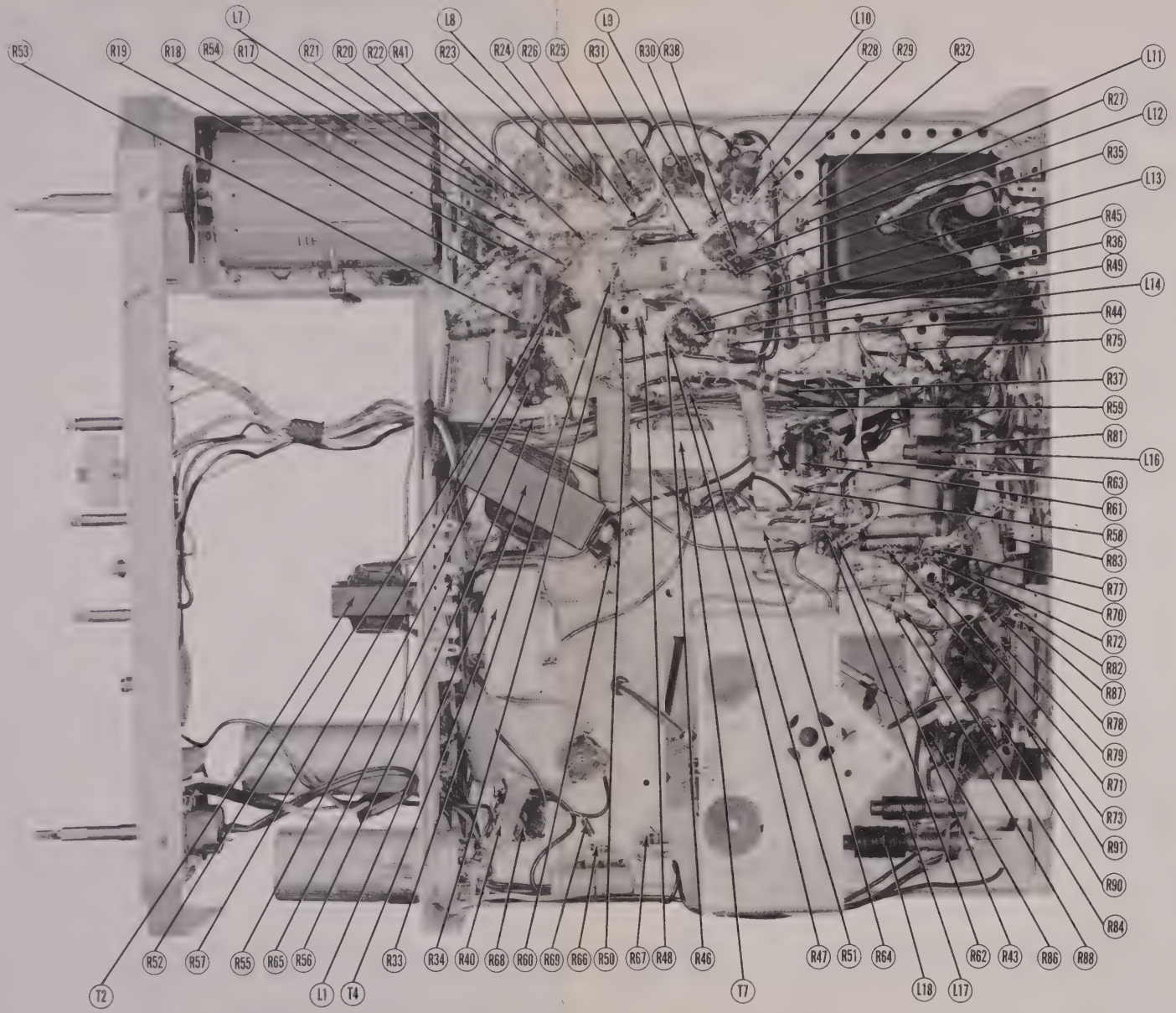
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			Part of Tuner.—Refer to Misc. Section
L3	Fil. Choke	0Ω				Part of Tuner
L4	RF, Mixer Grid and Osc. Coils	0Ω				Part of Tuner.—Refer to Misc. Section
L5	Fil. Choke	0Ω				Part of Tuner
L6	1st Video IF	1Ω				Part of Tuner
L7	2nd Video IF	.4Ω	.4Ω	C-1.476		
L8	3rd Video IF	.4Ω	.4Ω	C-1.476		
L9	4th Video IF	.4Ω	.4Ω	C-1.476		
L10	Peaking	8.6Ω		C-1.522-3		Blue Dot
L11	Peaking	15Ω		C-1.522-2		Green Dot
L12	Peaking	8.6Ω		C-1.522-3		Blue Dot
L13	Peaking	7Ω		C-1.522-4		Yellow Dot
L14	Sound IF	3.8Ω		C-1.529-1		
L15	Ratio Det. Trans.	4Ω	1.5Ω	C-1.528-1		
L16	Horiz. Osc. Coil	125Ω		B-1.530		Tap AT 35Ω
L17	Horiz. Lin.	20Ω		B-1.531		
L18A	Horiz. Size	35Ω		B-1.533-1		101, 102 Series
B	Horiz. Size			B-1.532-1		99-100 Series

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MAJESTIC PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4A			318.250		
M2	3AG	3A		B36.131	312003	341001	

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M3A	RF Tuner	D-36.137-2	Turret Type
B	RF Tuner	E36.143	Alternate
M4	Crystal		Video Det. (1N-64)
M5	Crystal		DC Restorer (1N-64) (Not used in all models)
M6	Switch	B-11.210	TV-Phono. (Not used in all models)
M7	Switch		Color TV (Not used in all models)
M8A	Ion Trap	C-36.144-1	TYPE TUBE AND MANUFACTURER: Sylvania, G.E., Fidelity, Haydu, (Rectangular 14CP4); Haydu, (Rect. 14DP4); G.E., Haydu, Tel-O-Tube, (Rect. 16RP4); Eureka, N.U., Taylor, (Rect. 16TP4); Thomas, Tel-O-Tube, (Rect. 16RP4); G.E., Sheldon, N.U., Tel-O-Tube, (Rect. 17BP4); Haydu, American Tel., (Rect. 17AP4); Dumont, (Round Metal New Type 19AP4)
B	Ion Trap	C-36.139	Dumont, (Round metal old type 19AP4)
C	Ion Trap	C-36.144-3	Sarkes Tarzian, (Round metal new type 19AP4); Sarkes Tarzian, (Rect. 16TP4)
D	Ion Trap	C-36.144-2	American Tel., Thomas, Sheldon, (Rect. 16RP4); Tel-O-Tube, (Rect. 14DP4); RCA, Rauland, (Round Metal 16GP4)
E	Ion Trap	C-36.144-4	N.U., American Tel., (Round 12LP4); Sheldon, (Rect. 14BP4)
F	Ion Trap	C-36.144-6	Dumont, (Rect. 14CP4)
	REPLACEMENT COILS FOR TURRET TYPE TUNER PART NO. D-36.137-2:		
	Ant. Coil	B-36.141-2	Channel 2
		B-36.141-3	" 3
		B-36.141-4	" 4
		B-36.141-5	" 5
		B-36.141-6	" 6
		B-36.141-7	" 7
		B-36.141-8	" 8
		B-36.141-9	" 9
		B-36.141-10	" 10
		B-36.141-11	" 11
		B-36.141-12	" 12
		B-36.141-13	" 13
	RF, Mixer Grid and Osc. Coils	B-36.141-102	Channel 2
		B-36.141-103	" 3
		B-36.141-104	" 4
		B-36.141-105	" 5
		B-36.141-106	" 6
		B-36.141-107	" 7
		B-36.141-108	" 8
		B-36.141-109	" 9
		B-36.141-110	" 10
		B-36.141-111	" 11
		B-36.141-112	" 12
		B-36.141-113	" 13
B2	Trimmer	B-4.119-2	Horiz. Drive (40-370 MMF)
	Safety Glass	D-26.585	Model 1610
	Safety Glass	D-26.614	Models 120, 121
	Safety Glass	D-26.615	Model 141
	Safety Glass	D-26.621	Models 150, 1600
	Safety Glass	D-26.624	Models 142, 1400
	Safety Glass	D-26.631	Model 1605



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MASCO
MODEL MB-60

MASCO
MODEL MB-60

MASCO MODEL MB-60

TRADE NAME	Masco, Model MB-60
MANUFACTURER	Mark Simpson Mfg. Cp., Inc., 32-28 49 St., Long Island City 3, New York
TYPE SET	AC Operated Audio Booster Amplifier
TUBES (SIX)	Types 6SL7GT 1st AF Amp., 6SN7GT 2nd AF - Phase Inverter, (2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier
POWER SUPPLY	105-125 Volts AC RATING 1.38 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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PARTS LIST AND DESCRIPTIONS

MASCO MODEL MB-60

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	1st AF Amp.	6SL7GT	6SL7GT	8BD	
V2	2nd AF Amp. - Phase Inv.	6SN7GT	6SN7GT	8BD	
V3	Power Output	807	807		
V4	Power Output	807	807		
V5	Rectifier	5X3GT	5X3GT	5T	
V6	Rectifier	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	16	450		PRS450/161		BR1645A		TVA-1708	Filter
C2	8	450		PRS450/8		BR845A		TVA-1704	Filter †
C3	8	450		PRS450/8		BR845A		TVA-1704	Filter
C4	8	450		PRS450/8		BR845A		TVA-1704	Filter
C5A	10	450		AF2222J		UP1111145		TVL-4760	▲ Decoupling
B	10	450							■ Decoupling
C	10	450							▲ Decoupling
C6	50	50		PRS50/50		BR505		TVA-1308	AF Amp. Cathode
C7	10	50		PRS50/10		BR105		TVA-1304	2nd AF Amp. Cathode
C8	10	50		PRS50/10		BR105		TVA-1304	Phase Inv. Cath.
C9	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Audio Coupling
C10	50			SI50	D6-500	5W5Q5	GP1K-50	19C28	1st AF Amp. Grid
C11	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C12	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C13	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Audio Coupling
C14	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Tone Comp.
C15	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Line Filter *
C16	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Phase Inv. Grid

* Not used in all models.
† Some models use 50MFD in this application.

CONTROLS

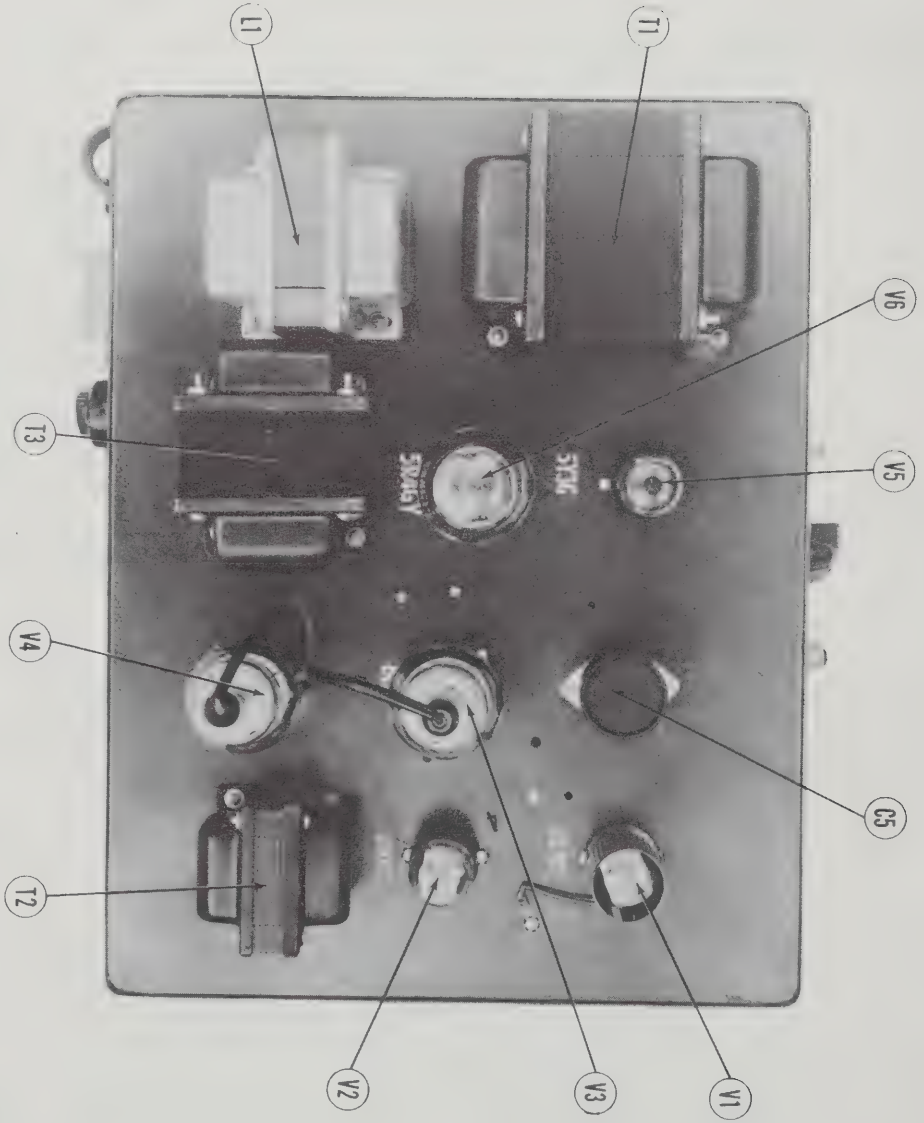
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AM-60-Z	B-60	Volume Control
B	Shaft			Not req.	RS-2	Not req.	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
R2	270Ω	1		BTA-270	Input Shunt
R3	270Ω	1		BTA-270	Input Shunt
R4	2200Ω	½		BTS-2200	1st AF Amp. Cathode
R5	27KΩ	½		BTS-27K	1st AF Amp. Plate
R6	270KΩ	½		BTS-270K	1st AF Amp. Grid
R7	470Ω	½		BTS-470	1st AF Amp. Cathode
R8	10KΩ	½		BTS-10K	1st AF Amp. Cathode
R9	270K	½		BTS-270K	1st AF Amp. Plate
R10	1Meg	1		BTA-1Meg	2nd AF Amp. Grid
R11	1500Ω	½		BTS-1500	2nd AF Amp. Cathode
R12	10KΩ	½		BTS-10K	2nd AF Amp. Plate
R13	270KΩ	½		BTS-270K	1st AF Amp. Decoupling - See Note
R14	47KΩ	½		BTS-47K	Decoupling - See Note
R15	1Meg	1		BTA-1Meg	Phase Inverter Grid
R16	1500Ω	½		BTS-1500	Phase Inverter Cathode
R17	10KΩ	10		1 3/4A-10K	Bleeder - Wire Wound
R18	10KΩ	10		1 3/4A-10K	Bleeder -Wire Wound
R19	20KΩ	25		2 1/2DA-20K	Bleeder - Wire Wound
R20	20KΩ	25		2 1/2DA-20K	Bleeder - Wire Wound
R21	1000Ω	10		1 3/4AA-1000	Bias Network - Adjustable Wire Wound
R22	18Ω	½			Parasitic Suppressor - See Note
R23	18Ω	½			Parasitic Suppressor - See Note

Note: Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.38A	1140VCT .150ADC	600VCT .100ADC	5V @ 2A	P58			
			SEC. 4	SEC. 5				
			5V @ 2A	6.3V @ 3.6A				

CHOKE (DRIVER)

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T2	.078 A Per Side	130Ω CT	11 Henries CT	C58				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	15KΩ CT	4Ω, 8Ω, 15Ω	60ΩCT	.3Ω, .4Ω, .5Ω	T58				
		SEC. 2		SEC. 2					
		70V, 250Ω, 140V		3Ω, 8.5Ω, 7.3Ω					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.137A	70Ω	4.5 Henries	C575	C-1411 ①	C-3196	R-7150 ②	① Redrill mtg. holes.
L2	.075A	114Ω	6.2 Henries	C235	C-1001	C-2993	R-1365 ②	② New mtg. hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MASCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	3 Amp.			312003	351009	

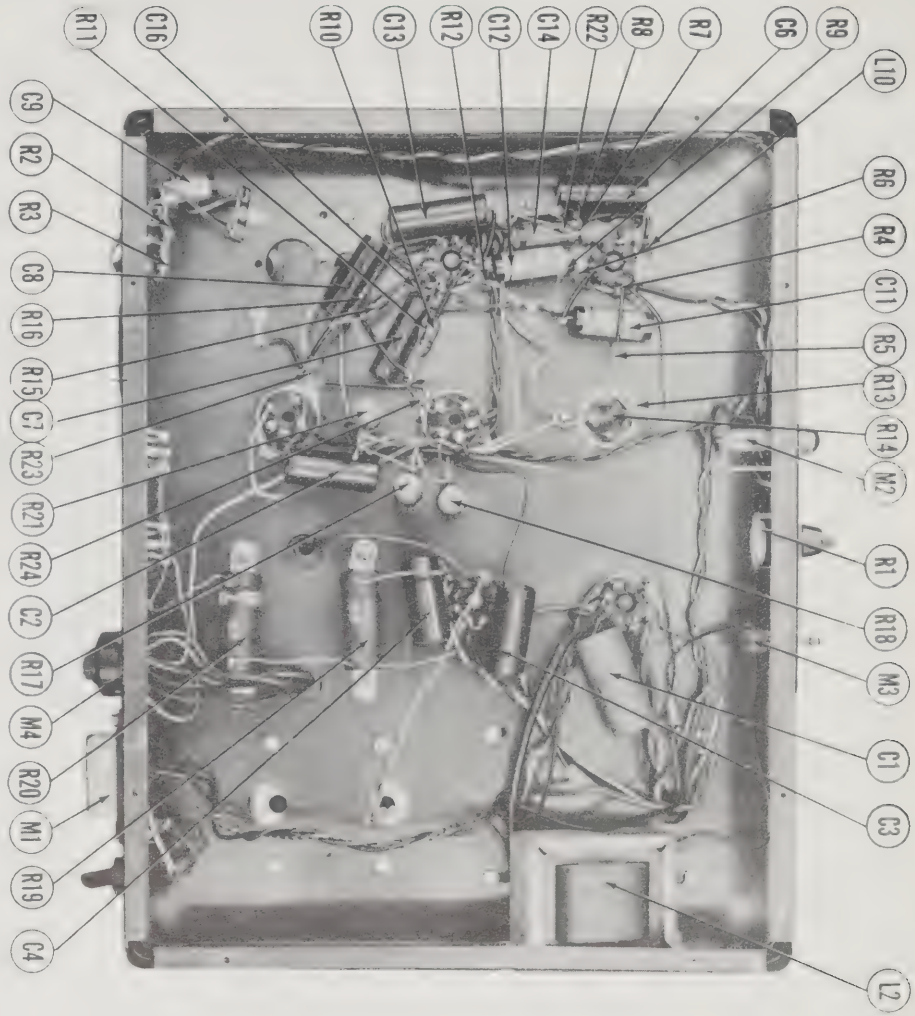
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M2	Bayonet	6-8	.15	Brown			Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M3	Switch		On-Off
M4	Switch		Impedance Selector

CHASSIS—BOTTOM VIEW

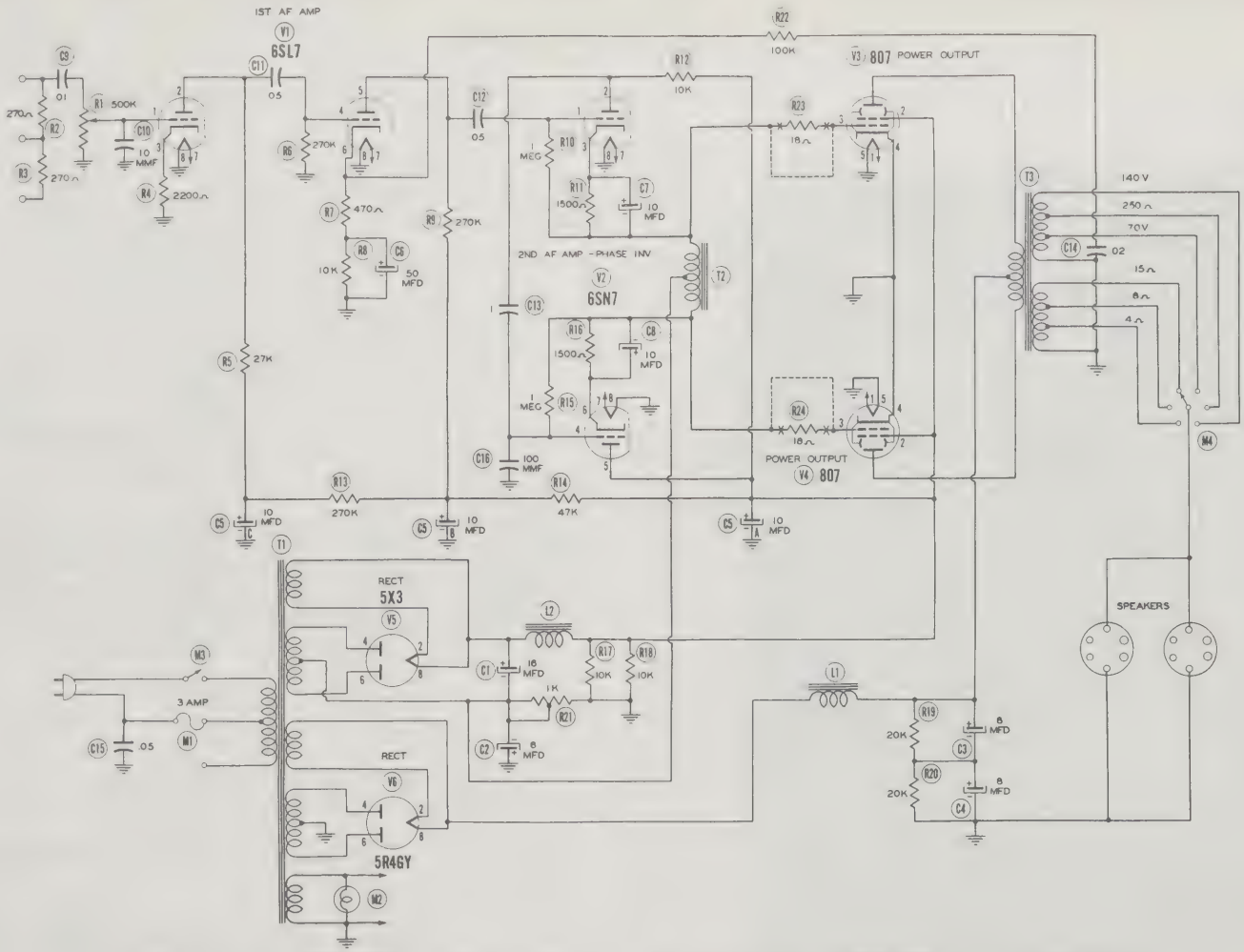


SET 127

FOLDER 8

MASCO MODEL MB-60

MASCO MODEL MB-60



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	0V	80VDC	1VDC	0V	160VDC	2.6VDC	6.3VAC	0V
V 2	6SN7GT	-4VDC	215VDC	-13VDC	-4VDC	290VDC	-11VDC	6.3VAC	0V
V 3	807	6.3VAC	290VDC	-20VDC	0V	0V	TOP CAP 450VDC		
V 4	807	6.3VAC	290VDC	-20VDC	0V	0V	TOP CAP 450VDC		
V 5	5Y3GT	290VDC	300VDC	0V	280VAC	0V	280VAC	0V	300VDC
V 6	5R4GY	0V	465VDC	480VDC	580VAC	0V	580VAC	220VDC	465VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	0Ω	†85KΩ	2.2KΩ	270KΩ	†320KΩ	10KΩ	1Ω	0Ω
V 2	6SN7GT	1Meg	†10KΩ	1.9KΩ	1Meg	†114Ω	1.9KΩ	1Ω	0Ω
V 3	807	1Ω	†114Ω	400Ω	0Ω	0Ω	TOP CAP #100Ω		
V 4	807	1Ω	†114Ω	400Ω	0Ω	0Ω	TOP CAP #100Ω		
V 5	5Y3GT	†114Ω	5KΩ	Inf.	425Ω	Inf.	425Ω	Inf.	5KΩ
V 6	5R4GY	Inf.	45KΩ	‡70Ω	35Ω	Inf.	35Ω	‡20KΩ	45KΩ

† MEASURED FROM PIN 8 OF V 5
‡ MEASURED FROM PIN 8 OF V 6

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt ; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

MITCHELL
MODEL 1268R

MITCHELL
MODEL 1268R

MITCHELL MODEL 1268R

TRADE NAME	Mitchell, Model 1268R
MANUFACTURER	Mitchell Mfg. Co., 2525 N. Clybourn Ave., Chicago, Illinois
TYPE SET	AC Operated Superheterodyne Receiver With Electric Clock
TUBES (FIVE)	Types 12SA7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	Tune for max. output	"	A5	"

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PARTS LIST AND DESCRIPTIONS

MITCHELL MODEL 1268R

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5	35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	N-7889	PRS150/50-30		EDL5315		TVA-2450	Filter Blue
B	30	150							Filter Red
C2	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200	N-1345	P288-05	DF-503	PTE4S5		72P51	Line Isolation
C4	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Tuning Cap Isolation *
C5	100	500	N-6015	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C6	100		N-7549	SI100N750	TCN-100	5R5T1	N750L-100	29C16	Fixed Trimmer
C7	.005	600	N-4894	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C8A	250		†	SI250	PC-81 †	5W5T25	GP2K-250	19C13	AF Amp. Plate
B	10000			BPD-01		PTE4S1	821-01	36C1	Audio Coupling
C9	.01	400	N-1344	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Output Plate
C10	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	Rect. Plate

* Not used in all models.
† Items C8A, C8B, R5A and R5B are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-7957	Q13-133	AM-60-Z	BSK-60	Volume Control - See Note 1
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A Per Instructions

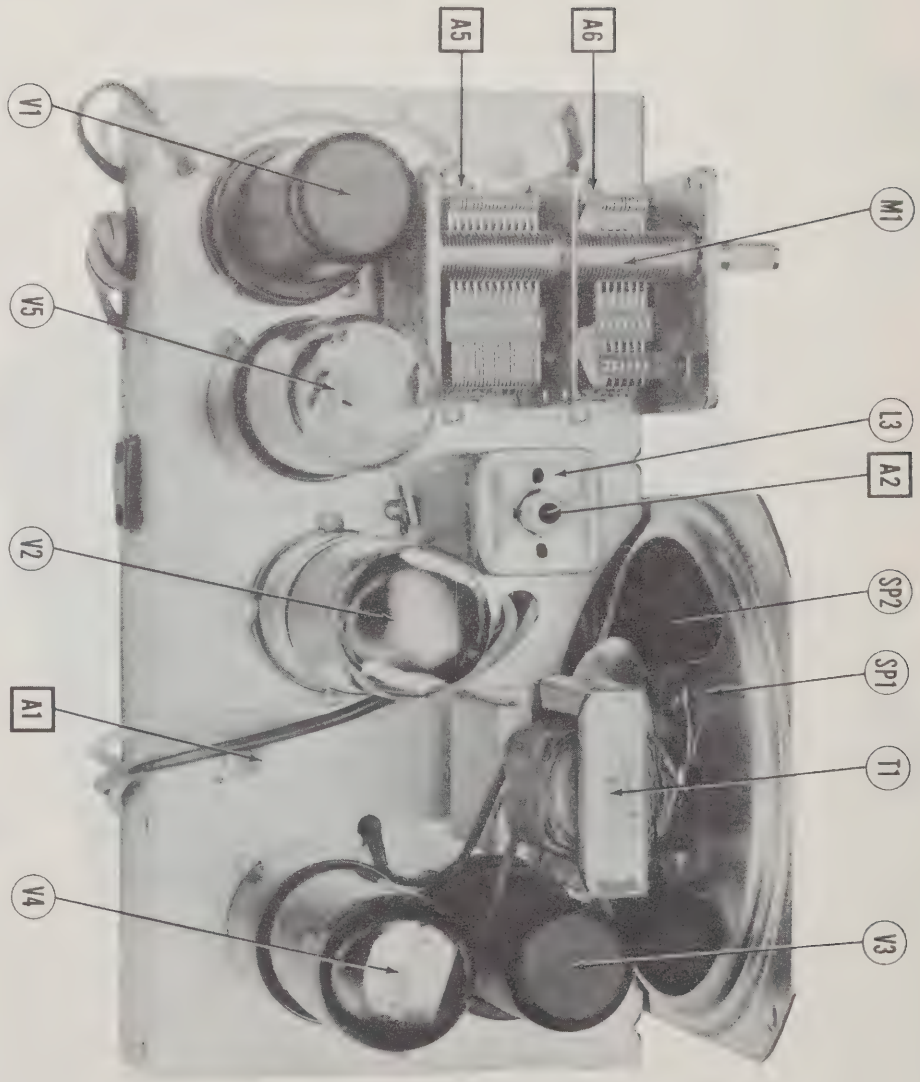
Note 1. Add 50KΩ resistor in series with high side of replacement control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	N-4025		Osc. Grid
R3	1Meg	½	N-1262	BTS-1Meg	AVC Network
R4	6.8Meg	½	N-4028	BTS-6.8Meg	AF Amp. Grid
R5A	220KΩ	½	†	BTS-220K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R6	220Ω	½	N-4024	BTS-220	Output Cathode
R7	1200Ω	1	N-4900	BTA-1200	Filter
R8	220KΩ	½		BTS-220K	Isolation - See Note 2

† Items R5A, R5B, C8A and C8B are combined into one unit. See C8 for parts listing.
Note 2. Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MITCHELL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.6KΩ	3.7Ω	305Ω	.7Ω		A-3332 ①	A-2028 ①	R0-2 ①	① Bend mounting tabs down, file out slots and mount original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	N7824	ST-113 Mod. P4-X	4A1	
	PM	3.7Ω				
	CONE DIA.	V. C. DIA.				
SP2	3 3/4"	9/16"				

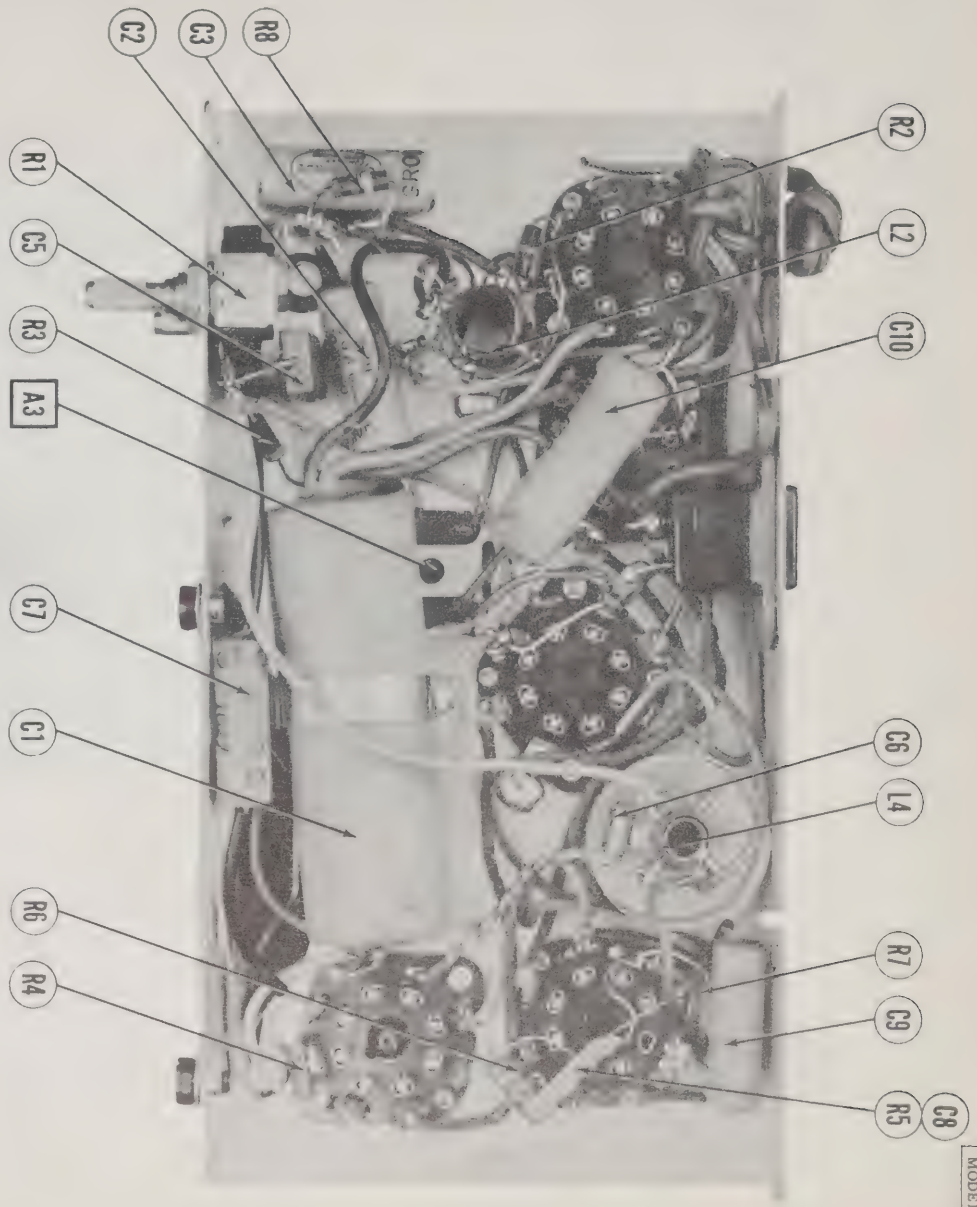
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MITCHELL PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.4Ω		N-7956		
L2	Osc. Coil	.7Ω	7.8Ω	N-7139	14-1073	
L3	1st IF	20Ω	20Ω	N-7888		
L4	2nd IF	22Ω	22Ω	N-7542		

MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M1	2 Gang Var. Cap	N-7141	(18-397MMF, 18-153MMF)

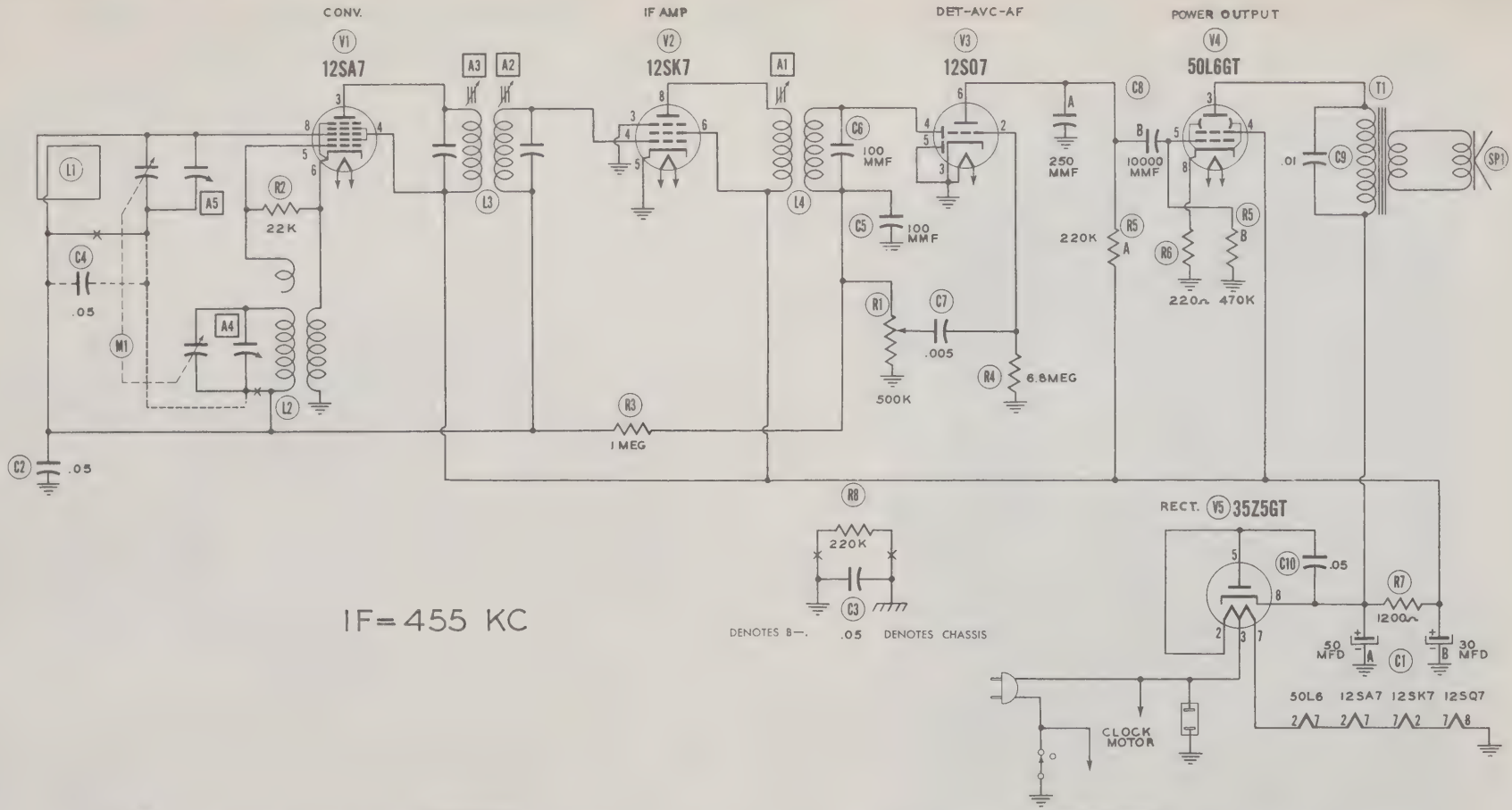
CHASSIS—BOTTOM VIEW



SET 127 FOLDER 9

MITCHELL MODEL 1268R

MITCHELL MODEL 1268R



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	40VAC	80VDC	80VDC	§-8.7VDC	0V	27VAC	-.4VDC
V 2	12SK7GT	0V	13VAC	0V	-.4VDC	0V	80VDC	27VAC	80VDC
V 3	12SQ7	0V	-.5VDC	0V	-.4VDC	0V	55VDC	13VAC	0V
V 4	50L6GT	0V	90VAC	105VDC	80VDC	0V	112VDC	40VAC	6.4VDC
V 5	35Z5GT	0V	107VAC	117VAC	0V	107VAC	0V	90VAC	112VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	40Ω	†1.2KΩ	†1.2KΩ	22KΩ	.7Ω	26Ω	1.5Meg
V 2	12SK7GT	220KΩ	14Ω	0Ω	1.5Meg	0Ω	†1.2KΩ	26Ω	†1.2KΩ
V 3	12SQ7	220KΩ	6.8Meg	0Ω	500KΩ	0Ω	†220KΩ	14Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†305Ω	†1.2KΩ	470KΩ	†0Ω	40Ω	220Ω
V 5	35Z5GT	Inf.	130Ω	120Ω	Inf.	130Ω	Inf.	90Ω	40KΩ

† MEASURED FROM PIN 8 OF V 5

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SENTINEL MODELS
IU425, IU428, IU432, 425, 428, 432

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MODEL 428

SENTINEL MODELS
IU425, IU428, IU432, 425, 428, 432

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Date 3/51 Set No. 127—Folder No. 10

SENTINEL MODELS 1U425, 1U428, 1U432, 425, 428, 432

SENTINEL MODEL 428

TRADE NAME	Sentinel, Models 1U425, 1U428, 1U432, 425, 428, 432
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Illinois
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.8 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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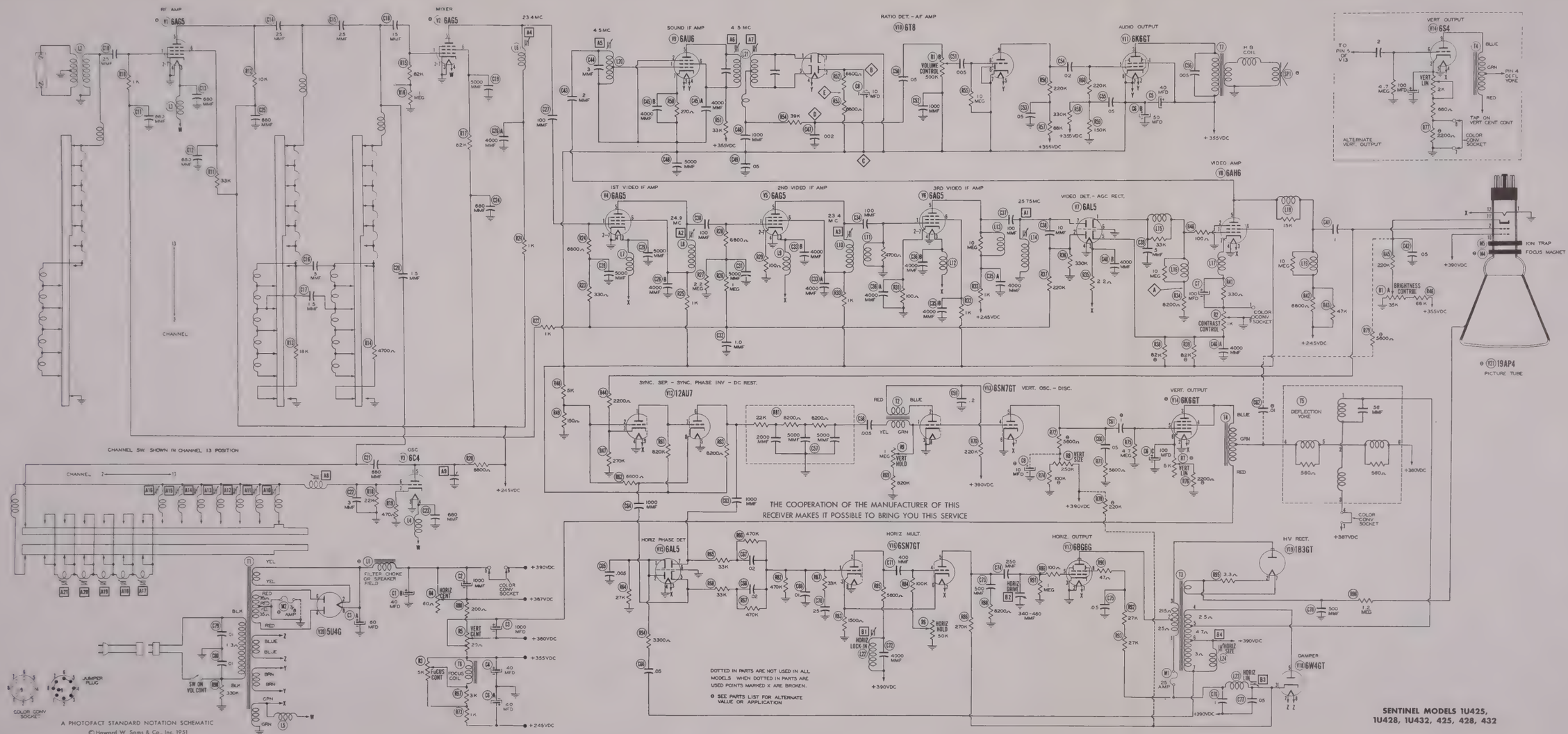
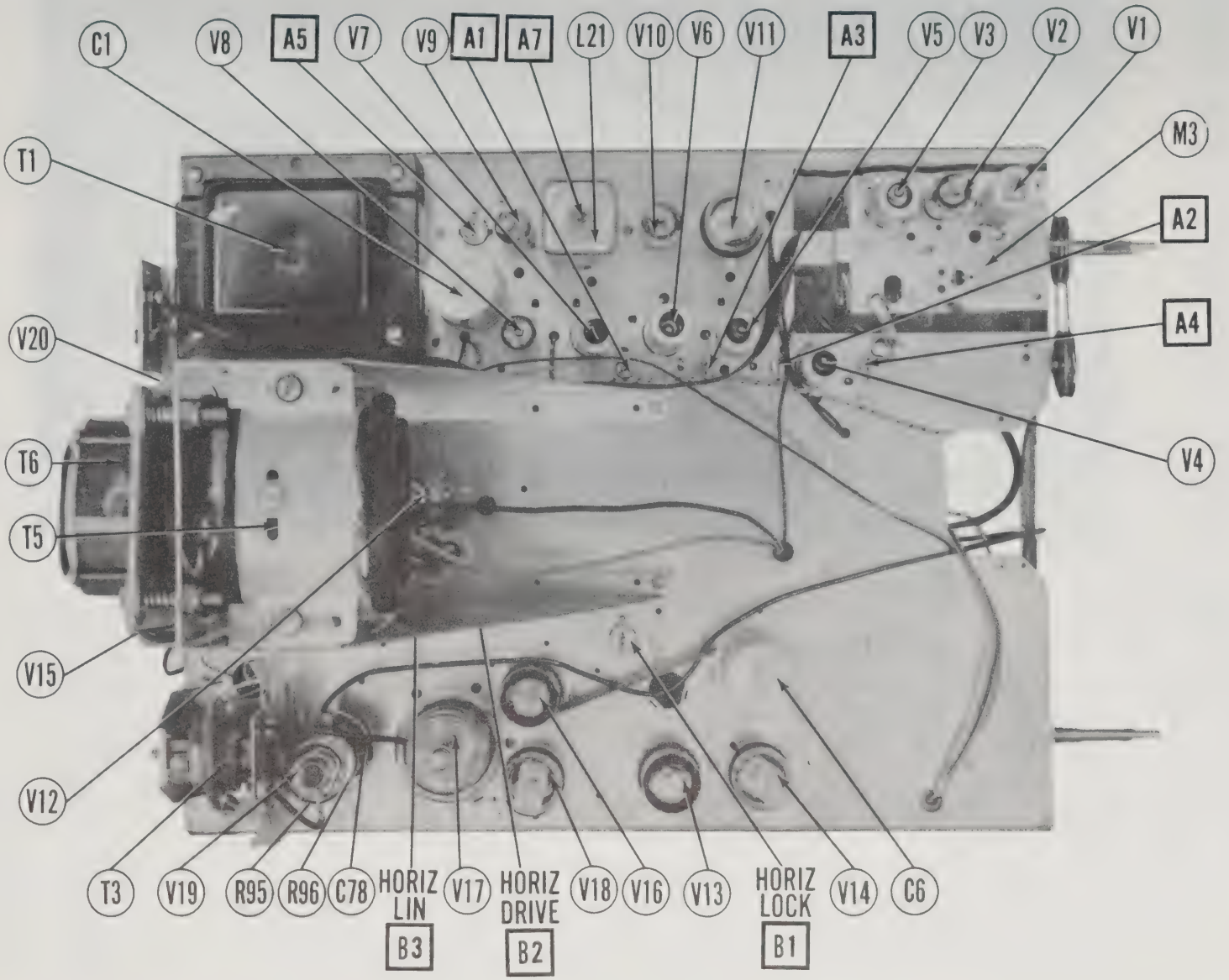
DATE 3-51 SET 127 FOLDER 10

SENTINEL MODELS 1U425, 1U428, 1U432, 425, 428, 432

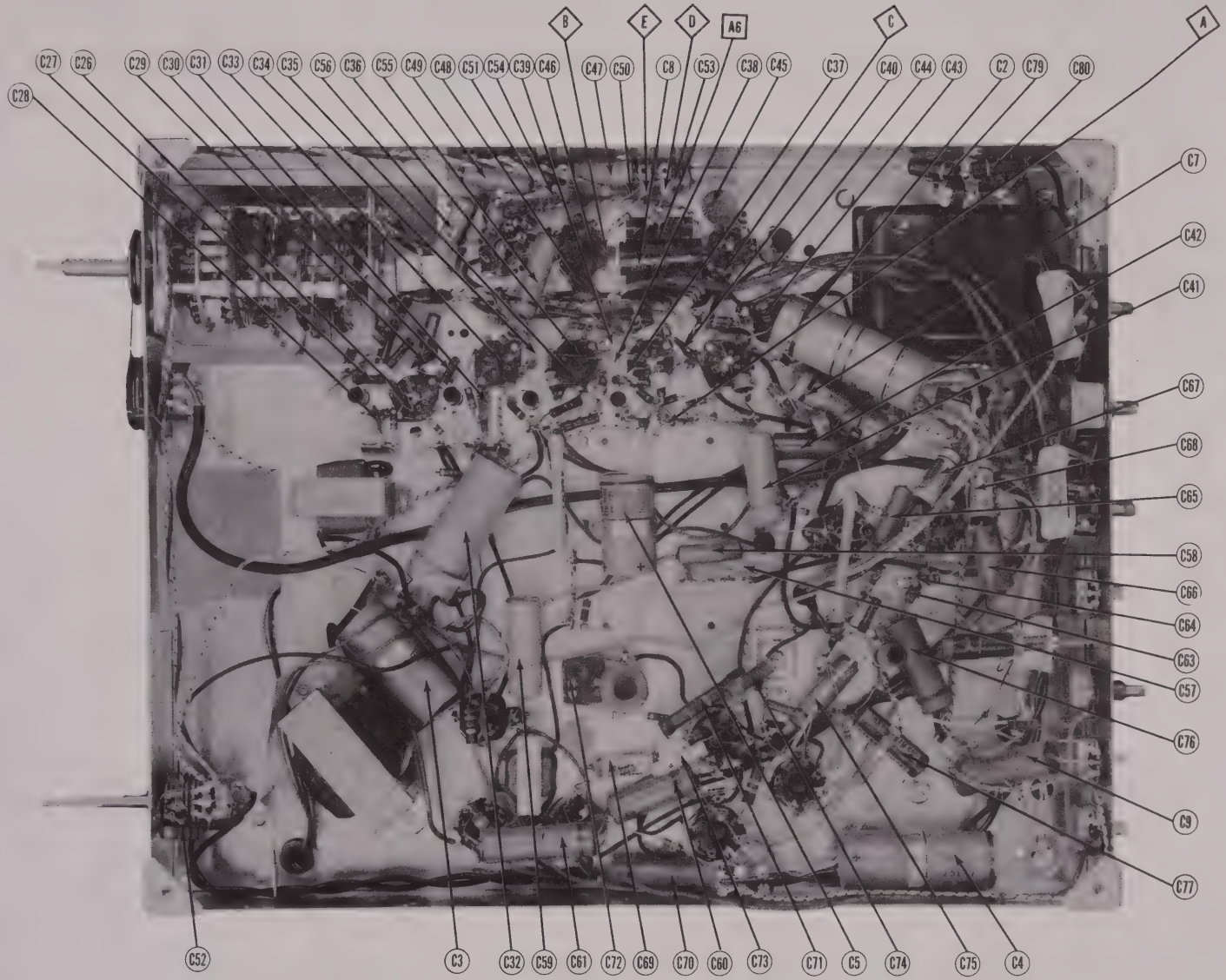


SENTINEL MODELS 1U425, 1U428, 1U432, 425, 428, 432

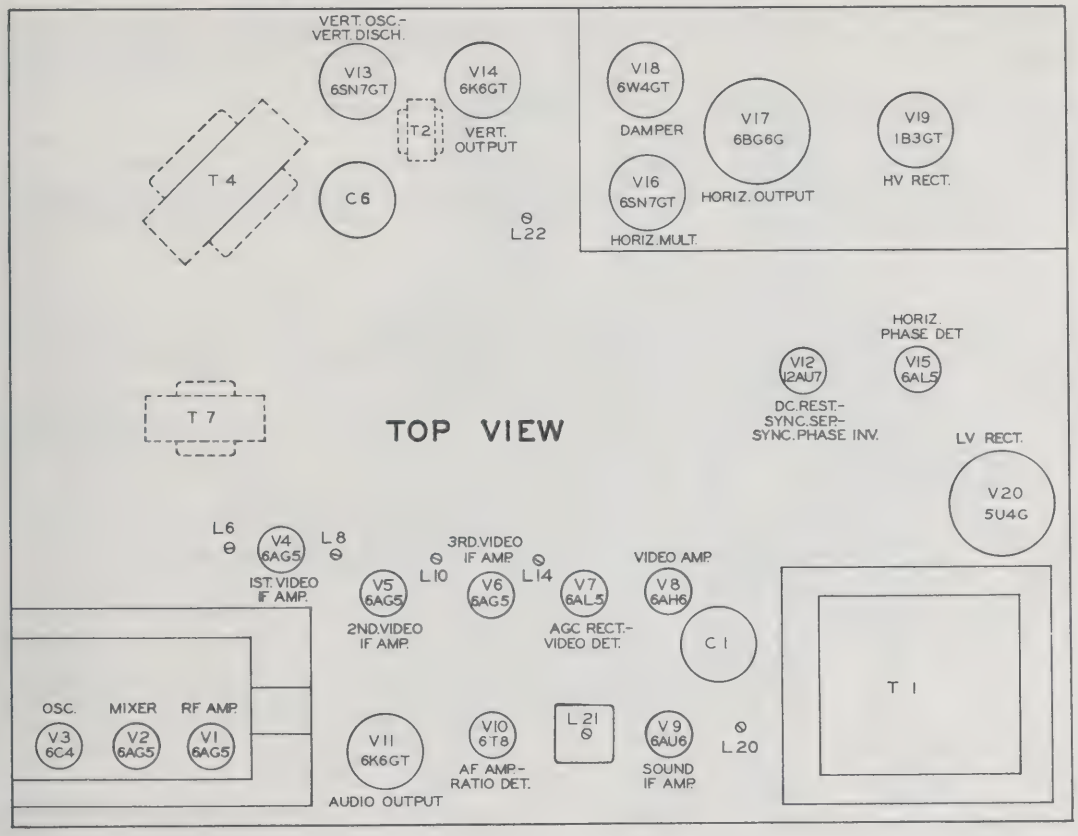


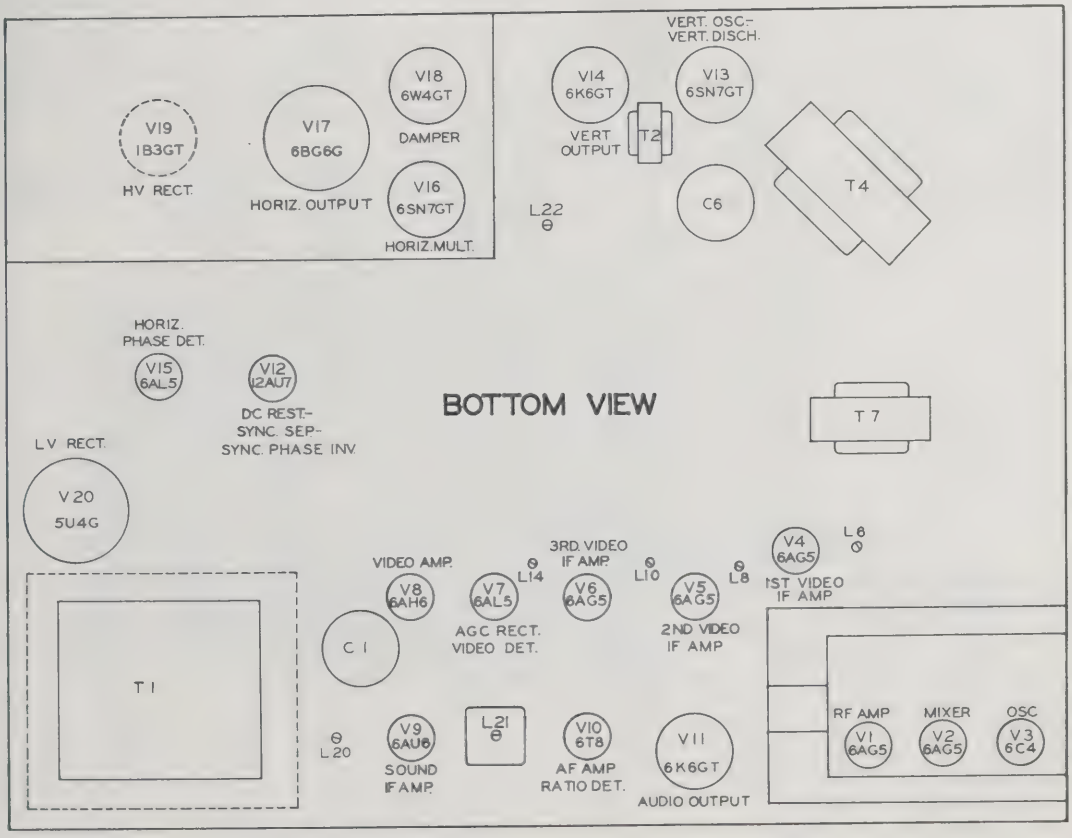
CHASSIS TOP VIEW

SENTINEL MODELS 1U425, 1U428, 1U432, 425, 428, 432



CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to prevent the possibility of erroneous indications.
Connect a 4.5 volt battery, positive to chassis, across C32.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.75MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain 1 volt reading.
2.	"	"	24.9MC	"	"	A2	"
3.	"	"	23.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21MC 25.5MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the leads of the VTVM are connected to approximately 160 volts with respect to chassis. Avoid grounding or touching the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (grid) of 6AH6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to Point (C).	A5, A6	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to Point (D). Common to point (E)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (grid) of 6AH6 (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per figure 2.
6.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A7	Reconnect capacitor C8. Adjust A7 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A6 for max. amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube(V 3).
The high channel series inductance adjustment (A8) should not be adjusted unless one or more of the high channel adjustments show insufficient range. If A8 is changed it will be necessary to readjust all of the high band channel adjustments. A9 is an all channel oscillator circuit adjustment, and should be adjusted only if one of the low band channel adjustments show insufficient range. If A9 is adjusted it will be necessary to readjust ALL channel adjustments. It should be noted that there are 14 positions on the channel switch. The last position on each end is unused.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A10	Adjust to place sound marker at 5% as shown in figure 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A 11	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

THE RF PORTION OF THIS TUNER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

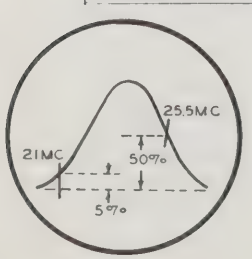


FIG.1

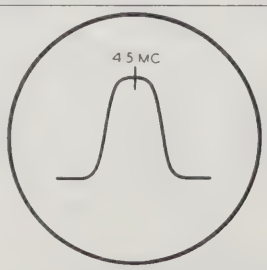


FIG. 2

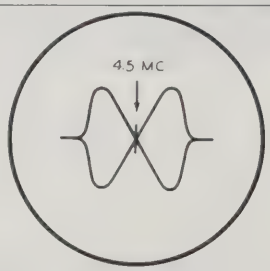


FIG. 3

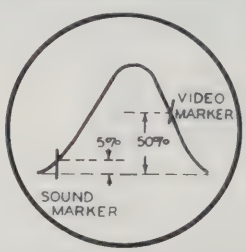
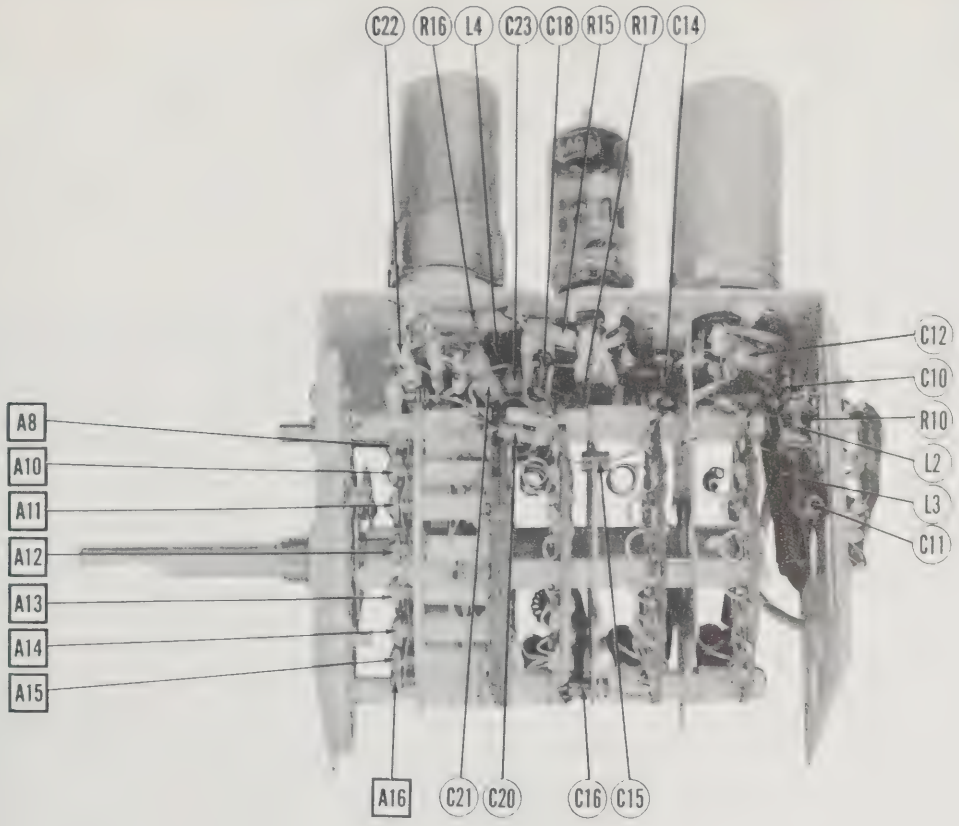
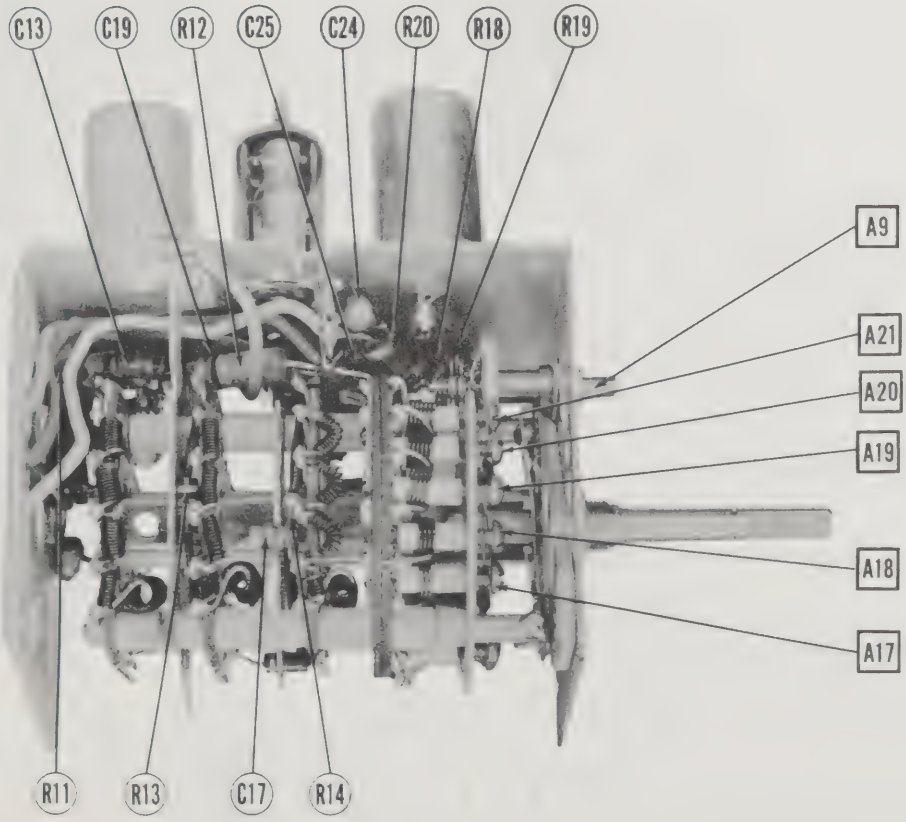


FIG.4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.4VDC	0V	6.3VAC	0V	165VDC	155VDC	0V		
V 2	6AG5	-.8VDC	0V	0V	6.3VAC	230VDC	140VDC	0V		
V 3	6C4	165VDC	0V	0V	6.3VAC	165VDC	8-5VDC	4.3VDC		
V 4	6AG5	-.3VDC	0V	6VAC	0V	125VDC	125VDC	0V		
V 5	6AG5	-.3VDC	.8VDC	6VAC	0V	125VDC	125VDC	.8VDC		
V 6	6AG5	0V	.8VDC	6VAC	0V	230VDC	125VDC	.8VDC		
V 7	6AL5	.7VDC	-.7VDC	5.7VAC	0V	0V	0V	0V		
V 8	6AH6	.3VDC	0V	6.3VAC	0V	225VDC	130VDC	3.2VDC		
V 9	6AU6	#0V	#0V	#0V	#6.3VAC	#90VDC	#90VDC	#1.3VDC		
V 10	6T8	#-.5VDC	#2VDC	#-.5 VDC	#6.3VAC	#0V	#0V	#0V	#-.6VDC	#80VDC
V 11	6K6GT	0V	#6.3VAC	#205VDC	#225VDC	#-7VDC	0V	#0V	#0V	
V 12	12AU7	40VDC	5VDC	8VDC	0V	0V	80VDC	40VDC	40VDC	6.3VAC
V 13	6SN7GT	-75VDC -95VDC	275VDC	0V	-75VDC -95VDC	250VDC 40VDC	0V	6.3VAC	0V	
V 14	6K6GT	0V	0V	350VDC	350VDC	0V	360VDC	#6.3VAC	55VDC 40VDC	
V 15	6AL5	-.1VDC	-.1VDC	6.3VAC	0V	6VDC	0V	-3VDC		
V 16	6SN7GT	.7VDC	340VDC	15VDC	-8VDC -11VDC	145VDC	15VDC	6.3VAC	0V	
V 17	6BG6G	320VDC	0V	0V	0V	-12VDC	-4.5VDC 0V	6.3VAC	225VDC	TOP CAP *
V 18	6W4GT	0V	0V	410VDC	360VDC	390VDC	0V	¶	¶	
V 19	1B3GT	* DO NOT MEASURE								
V 20	5U4G	0V	400VDC	0V	380VAC	0V	380VAC	0V	400VDC	
V 21	19AP4	0V	8VDC	PIN 10 390VDC	PIN 11 105VDC	PIN 12 6.3VAC				

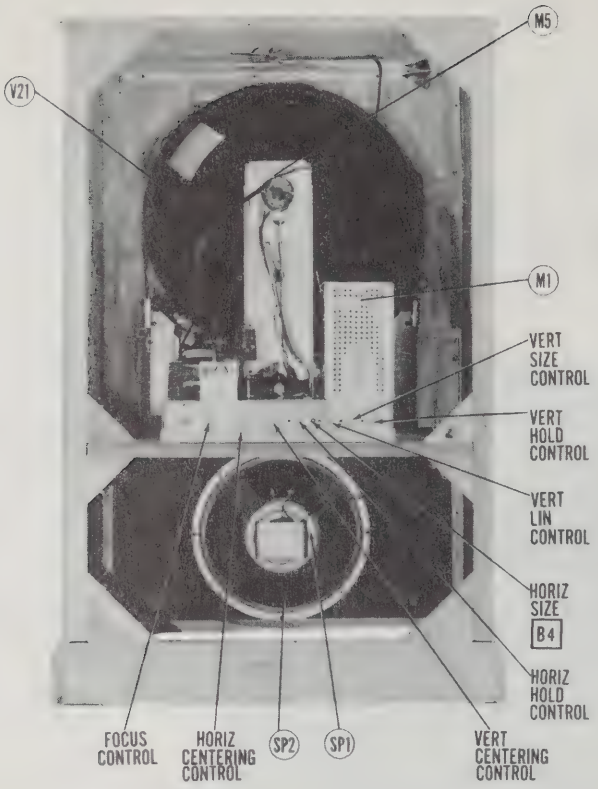
FOCUS CONTROL FULLY COUNTER CLOCKWISE
CENTERING CONTROLS SET MIDWAY
¶ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM PIN 8 OF V 11
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	500KΩ	0Ω	.1Ω	0Ω	†13KΩ	†35KΩ	0Ω		
V 2	6AG5	1.1Meg	0Ω	0Ω	.1Ω	†4.3KΩ	†85KΩ	0Ω		
V 3	6C4	†10KΩ	Inf.	0Ω	.1Ω	†10KΩ	22KΩ	470Ω		
V 4	6AG5	500KΩ	0Ω	.8Ω	0Ω	#1KΩ	#1KΩ	0Ω		
V 5	6AG5	1Meg	100Ω	.8Ω	0Ω	#1KΩ	#1KΩ	100Ω		
V 6	6AG5	3.8Ω	100Ω	.8Ω	0Ω	†4.3KΩ	#1KΩ	100Ω		
V 7	6AL5	8.2KΩ	330KΩ	1.5Ω	0Ω	0Ω	0Ω	.2Ω		
V 8	6AH6	8.3KΩ	0Ω	.1Ω	0Ω	†9.3KΩ	#0Ω	1.3KΩ		
V 9	6AU6	#.9Ω	#0Ω	#0Ω	#.2Ω	†33KΩ	†33KΩ	#270Ω		
V 10	6T8	Inf.	#13KΩ	Inf.	#.2Ω	#0Ω	#0Ω	#0Ω	#10Meg	†290KΩ
V 11	6K6GT	0Ω	#.2Ω	†780Ω	†320Ω	370KΩ	Inf.	#0Ω	5KΩ	
V 12	12AU7	#820KΩ	150Ω	270KΩ	0Ω	0Ω	#8.2KΩ	#820KΩ	7KΩ	.1Ω
V 13	6SN7GT	820KΩ 1.8Meg	†220KΩ	0Ω	820KΩ 1.8Meg	†560KΩ †650KΩ	0Ω	.1Ω	0Ω	
V 14	6K6GT	0Ω	0Ω	†1KΩ	†1KΩ	4.7Meg	†320Ω	.1Ω	7.2KΩ 2.2KΩ	
V 15	6AL5	27KΩ	27KΩ	.1Ω	0Ω	975KΩ	0Ω	975KΩ		
V 16	6SN7GT	470KΩ	†5.7KΩ	1.5KΩ	100KΩ 150KΩ	▲270KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BG6G	▲27KΩ	0Ω	0Ω	Inf.	1Meg	50KΩ 0Ω	.1Ω	▲55KΩ	TOP CAP ▲42Ω
V 18	6W4GT	Inf.	Inf.	Inf.	†320Ω	†100Ω	Inf.	Inf.	Inf.	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲255Ω
V 20	5U4G	Inf.	60KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	60KΩ	
V 21	19AP4	0Ω	270KΩ	PIN 10 †100Ω	PIN 11 220KΩ	PIN 12 .1Ω				

MEASURED FROM PIN 8 OF V 11
† MEASURED FROM PIN 2 OF V 20
▲ MEASURED FROM PIN 3 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal lock slug (B1) until the picture synchronizes horizontally.

Remove the insulating sleeve from the green wire twisted around the focus coil leads and located between the deflection yoke mounting brackets and connect the DC probe of a VTVM to the wire.

Adjust the horizontal drive trimmer (B2) until the picture starts to squeeze in at the center, and note the reading on the VTVM. Then back off the trimmer until the VTVM reading decreases 2 volts. The final reading should be between -20volts and -28volts .

Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right. If B3 is changed, repeat the adjustment of B2.

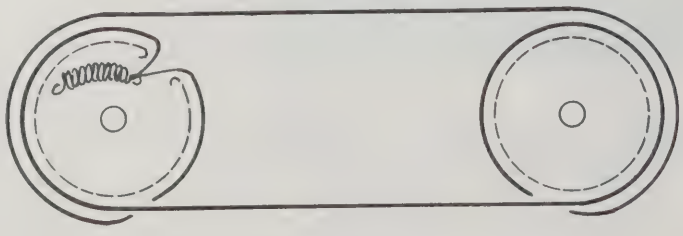
Adjust the horizontal size slug (B4) until the picture fills the mask horizontally.

DISASSEMBLY INSTRUCTIONS

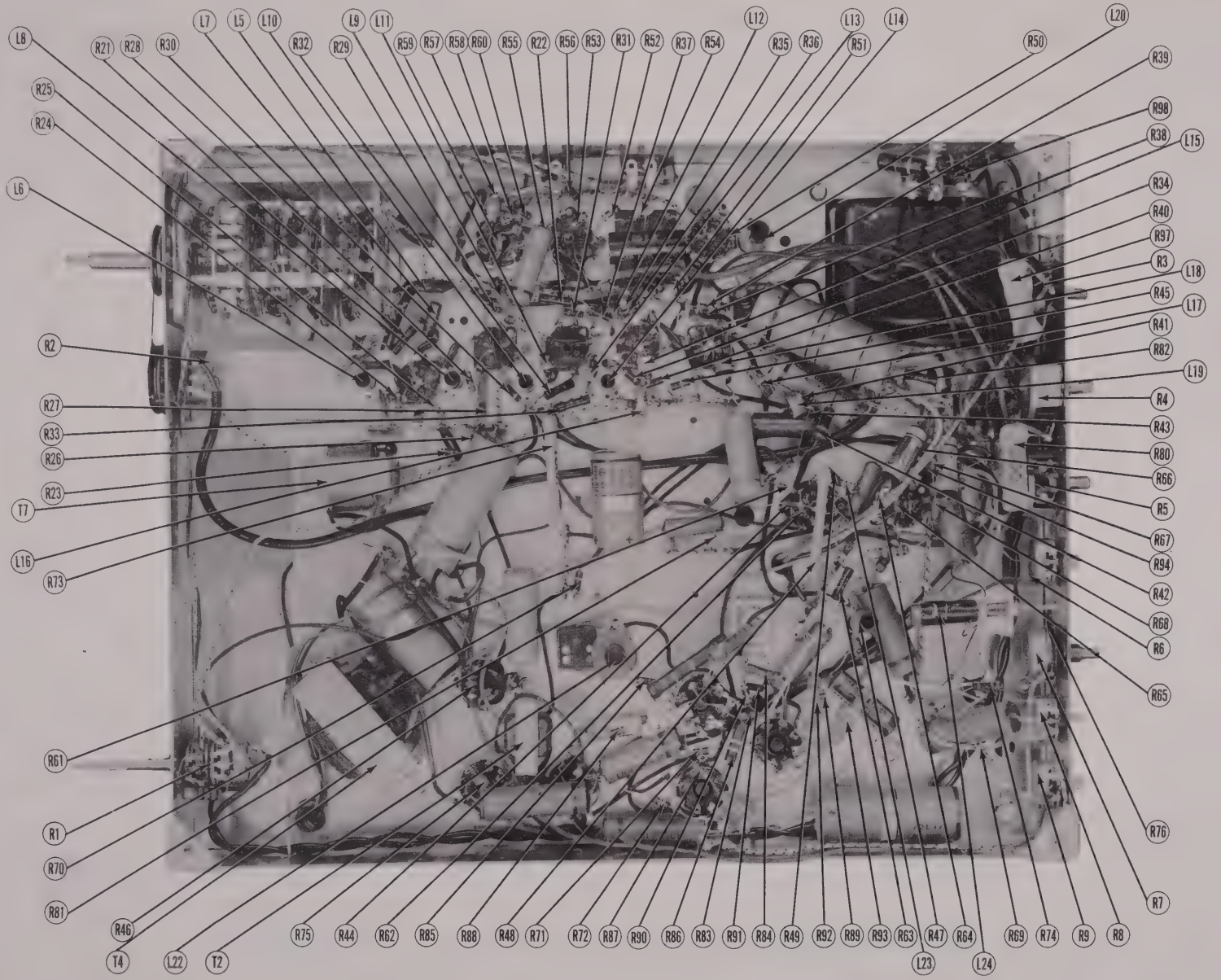
1. Remove four push-on type control knobs.
2. Remove eight wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker leads.
5. Remove six bolts holding chassis in cabinet. Remove chassis.
6. Remove four 1/4" hex nut holding speaker to cabinet. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

CONTRAST CONTROL FULLY COUNTERCLOCKWISE



DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	7BD	
B	RF Amp.	6CB6	6CB6	7CM	
C	RF Amp.	6BC5	6BC5	7BD	
V2A	Mixer	6AG5	6AG5	7BD	
B	Mixer	6CB6	6CB6	7CM	
C	Mixer	6BC5	6BC5	7BD	
V3	Oscillator	6C4	6C4	6Q	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6AG5	6AG5	7BD	
V7	Video Det. -AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amp.	6AH6	6AH6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.-AF Amp	6T8	6T8	9E	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Sep. -Sync. Phase Inv.-DC Rest.	12AU7	12AU7	9A	
V13	Vert. Osc. Disch.	6SN7GT	6SN7GT	8BD	
V14A	Vert. Output	6K6GT	6K6GT	7S	
B	Vert. Output	6S4	6S4	9AC	
V15	Hor. Phase Det.	6AL5	6AL5	6BT	
V16	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V17	Hor. Output	6BG6G	6BG6G	5BT	
V18	Damper	5W4GT	5W4GT	4CG	
V19	H.V. Rectifier	1B3GT	1B3GT	3C	
V20	L.V. Rectifier	5U4G	5U4G	5T	
V21A	Picture Tube	19AP4A	19AP4A	12D	
B	Picture Tube	19AP4	19AP4	12D	
C	Picture Tube	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	475	25E42	AFH128J		UPT9450		TVL-2770	▲ Filter
B	40	475							▲ Filter
C	1000	5	25E52	PR56/1000		BRH610		TVA-1104	Hor. Cent. Cont. Byp.
C3	1000	3	25E50	PR56/1000		BRH610		TVA-1104	Vert. Cent. Cont. Byp.
C4	40	450	25E47	PR5450/40		BR4045A		TVA-1712	Filter
C5	40	300	25E31	PR5450/40		BR4035A		TVA-1611	Filter
C6A	40	450	25E44	AFH8J8D26B		UPT300		TVL-3706	▲ Filter
B	50	150							● Filter
C	100	50							Vert. Output Cath.
C7	100	10	25E12	PR325/100		BRH21A		TVA-1130	V. Amp. Cath.
C8	10	25	25E8	PR550/10		BRI02A		TVA-1204	Stabilizing Cap
C9	10	475	25E58	PR5500/10		BR850A		TVA-1802	Decoupling *
C10	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C11	680			SI680	D6-681		GP2K-680	19C17	AGC Filter
C12	680			SI680	D6-681		GP2K-680	19C17	RF Amp. Screen
C13	680			SI680	D6-681		GP2K-680	19C17	RF Amp. Fil.
C14	25			SI25	D6-250		GP1K-25	19C27	RF Coupling
C15	.25								RF Coupling
C16	.5				TCZ-.5				RF Coupling
C17	1.5			SL.5NPO	TCZ-1.5		NPOK-1.5		RF Coupling
C18	15			SI15	D6-150		GP1K-15	19C22	RF Coupling
C19	5000			BPD-005	DD-502		811-005	29C1	Mixer Screen
C20	1.5			SL.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C21	680			SI680	D6-681		GP2K-680	19C17	Osc. Feedback
C22	3						N150K-3		Osc. Grid
C23	680			SI680	D6-681		GP2K-680	19C17	Osc. Fil.
C24	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C25	680			SI680	D6-681		GP2K-680	19C17	RF Bypass
C26A	4000		23E2037	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	Mixer Decoupling
B	4000					1D5D4			1st V. IF Dec.
C27	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C28	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C29	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C30	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C31	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C32	1.0	200	23E226	484-1.0		GT2W1		2TM-M1	AGC Filter
C33A	4000		23E2037	BPD-2X004	DD-2-502	1D5D5	822-2X004	36C2	2nd V. IF Dec.
B	4000					1D5D5			2nd V. IF Fil.
C34	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C35A	4000		23E2037	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	3rd V. IF Plate Dec.
B	4000					1D5D4			3rd V. IF Screen
C36A	4000		23E2037	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	3rd V. IF Cath.
B	4000					1D5D4			3rd V. IF Fil.
C37	100		23E2027-2	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C38	10		23E25	SI10	D6-100	5W5Q1	GP1K-10	19C19	IF Coupling
C39	5		23E28	SI5NPO	TCZ-4.7	5R5V5	NPOK-5	MS-55	V. Diode Filter
C40A	4000		23E2037	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	DAGC Dec.
B	4000					1D5D4			V. Det. - AGC Fil.
C41	.1	400	23E418	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C42	.05	200	23E216	P288-05	DF-503	PTE4S5		2TM-S5	Pic. Tube Cath.
C43	2		23E21		TCZ-2.2				S. IF Coupling
C44	3		23E13				N750K-3		Fixed Trimmer
C45A	4000		23E2037	BPD-2X004	DD-2-502	1D5D4	822-2X004	36C2	S. IF Dec.
B	4000					1D5D4			S. IF Cath.
C46	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	Diode Load Cap
C47	.002	400	23E205	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	De-emphasis
C48	5000		23E2025	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C49	.05	400	23E216	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C50	.05	400	23E216	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C51	.005	600	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C52	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C53	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	AF Amp. Plate Dec.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	.02	400	23E413	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C55	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Bias Filter
C56	.005	600	23E608	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C57A	2000		† 23E2023-4	P688-002	†	PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000			P688-005		PTE6D5	811-005	6TM-D5	Integrator Net
C58	.005	200	23E608	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Vert. Osc. Grid
C59	.2	400	23E420	P488-22		GT4P2		4TM-P22	Vert. Osc. Dec.
C60	.05	600	23E416	P688-05		PTE6S5		6TM-S5	Vert. Discharge
C61	.1	600	23420	P868-1	DF-104	PTE8P1		6TM-P1	Vert. Sweep Coupling §
C62	.01	800	23611	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Vert. Retrace Blanking †
C63	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	Hor. Sync. Coupling
C64	1000		23E2012	SI1000	D6-102	1W5D1	GP2L-001	19C1	Hor. Sync. Coupling
C65	.005	200	23E608	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Voltage Divider
C66	.05	600	23E616	P688-05	DF-503	PTE6S5		6TM-S5	Hor. Feedback
C67	.02	400	23E213	P488-02	DF-203	PTE4S2		4TM-S2	AFC Filter
C68	.02	400	23E213	P488-02	DF-203	PTE4S2		4TM-S2	AFC Filter
C69	.01	400	23E211	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AFC Filter
C70	.25	400	23E222	P488-25		GT4P25		4TM-P25	AFC Filter
C71	400		23E2030-4	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Hor. MV Feedback
C72	4000	500	23E86	1464-004		1DR5D4		MS-24	Fixed Trimmer
C73	500		23E2030-9	SI500	D6-501	5W5T5	GP2K-500	1FM-35	Hor. Discharge
C74	250		23E2030-3	SI250	D6-251	5W5T25	GP2K-250	1FM-325	Hor. Sweep Coupling
C75	.05	400	23E616	P488-05	DF-503	PTE4S5		4TM-S5	Hor. Output Screen
C76	.1	600	23E618	P688-1		PTE6P1		6TM-P1	Damper Filter
C77	.05	600	23E616	P688-05		PTE6S5		6TM-S5	Damper Filter
C78	500	20000	23E2039	HV20C	TV5-502				H. V. Filter
C79	.01	400	23E2035-3	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter
C80	.01	400	23E2035-3	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter

* YA Series Chassis Use .1MFD In This Application.
† Not Used In YA Series Chassis.
§ Items C57A, C57B C57C, R81A, R81B And R81C Are Combined Into One Unit.
# Some Models Use .2MFD In This Application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	35KΩ	½	28E64-2	Concentrikit	RTV-248	SBB-658-S	Brightness Control - Front
B	500KΩ	½		B11-123 $ ♦			Volume Control And SW - Rear
C	Shaft End			B13-133 $			Attach Per Instructions In "Concentrikit"
D	Switch			E-187 $			Attach Per Instructions In "Concentrikit"
R2A	1000Ω	½	28E65	76-1 $	AM-8-S	B-5	Contrast Control
B	Shaft		Not req.	Q11-108	RS-2	Not req.	Attach to R2A Per Instructions
R3	5000Ω	2	28E57	Not req.	43-5000	VK-135	Focus Control - Wire Wound
R4	50Ω	2	28E54	W-5000	43-50	VK-117	Horiz. Centering Control - Wire Wound
R5	20Ω	2	28E68	W-50	43-20	VK-107	Vert. Centering Control - Tapped @ 10Ω Wire Wound
R6A	50KΩ	½	28E43	W-20X10	RTV-3	5VT-501	Horiz. Hold Control
B	Shaft		Not req.	Q11-123	AG-44-S	AN-31	Attach toR6A Per Instructions
R7A	5000Ω	½	28E44	Not req.	FKS-1/4	AK-1	Vert. Linearity Control - See Note 1
B	Shaft		Not req.	Q11-114	AG-19-S	AN-10	Attach to R7A Per Instructions
R8A	250KΩ	½	28E45	Not req.	FKS-1/4	AK-1	Vert. Size Control
B	Shaft		Not req.	Q11-130	AG-55-S	AN-50	Attach to R8A Per Instructions
R9A	1Meg	½	28E36	Not req.	FKS-1/4	AK-1	Vert. Hold Control
B	Shaft		Not req.	Q11-137	AG-61-S	AN-69	Attach to R9A Per Instructions

Note 1. When A 684 Vert. Amplifier Is Used R7 Becomes 2000Ω With Part # 28E67.
$ Additional Parts To Be Used In "Concentrikit".
♦ Connect 100KΩ From Center Arm To Low Side Of Control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R10	1000Ω 20%	½		BTS-1000	RF Amp. Grid
R11	33KΩ 20%	½			RF Amp. Screen
R12	10KΩ 20%	½			RF Amp. Plate
R13	18KΩ 20%	½			RF Coil Shunt
R14	4700Ω	½		BTS-4700	Mixer Grid Coil Shunt
R15	82KΩ 20%	½			Mixer Grid
R16	1Meg 20%	½			Mixer Grid
R17	82KΩ 20%	½			Mixer Screen
R18	22KΩ 20%	½			Osc. Grid
R19	470Ω 20%	½		BTS-470	Osc. Cathode
R20	6800Ω 20%	1			Osc. Plate
R21	1000Ω	½	27E102-2	BTS-1000	Mixer Plate Decoupling
R22	1000Ω	½	27E102-2	BTS-1000	AGC Network
R23	330Ω	½	27E331-2	BTS-330	AGC Network
R24	6800Ω 5%	½	27E1009-13	BTS-6800-5%	1st Video IF Amp. Grid
R25	1000Ω	½	27E102-2	BTS-1000	1st Video IF Amp. Decoupling
R26	1Meg 20%	½	27E105-2	BTS-1Meg	AGC Network
R27	2.2Meg 20%	½	27E225-2	BTS-2.2Meg	AGC Network
R28	6800Ω 5%	½	27E1009-13	BTS-6800-5%	2nd Video IF Amp. Grid
R29	100Ω	½	27E101-2	BTS-100	2nd Video IF Amp. Cathode
R30	1000Ω	½	27E102-2	BTS-1000	2nd Video IF Amp. Decoupling
R31	100Ω	½	27E101-2	BTS-100	3rd Video IF Amp. Cathode
R32	1000Ω	½	27E102-2	BTS-1000	3rd Video IF Amp. Screen
R33	1000Ω	½	27E102-2	BTS-1000	3rd Video IF Amp. Plate Decoupling
R34	82000Ω 5%	½	27E822-2	BTS-8200-5%	Video Det. Diode Load
R35	2.2Ω	½	27E1015-2	BW-½-2.2	Video Det. Filament - Wire Wound
R36	330KΩ 20%	½	27E334-2	BTS-330K	AGC Diode Load
R37	220KΩ 20%	½	27E1009-6	BTS-220K	AGC Network
R38	82KΩ	½		BTS-82K	Voltage Divider - See Note 2
R39	82KΩ	½		BTS-82K	Voltage Divider - See Note 2
R40	100Ω 20%	½	27E101-2	BTS-100	Parasitic Supp
R41	330Ω	½	27E331-2	BTS-330	Video Amp. Cathode
R42	6800Ω 5%	1	27E1009-14	BTA-6800-5%	Video Amp. Plate
R43	47KΩ	½	27E473-2	BTS-47K	Video Amp. Plate
R44	2200Ω	½	27E222-2	BTS-2200	Picture Tube Grid
R45	220KΩ 20%	½	27E224-2	BTS-220K	Picture Tube Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	68KΩ	1	27E683-3	BTA-68K	Voltage Divider
R47	270KΩ	½	27E274-2	BTS-270K	DC Restorer Load
R48	5000Ω	5	27E1016-4	1 3/4A-5000	Voltage Divider - Wire Wound
R49	150Ω	½	27E151-2	BTS-150	Voltage Divider
R50	270Ω	1	23E2025	BTS-270	Sound IF Amp. Cathode
R51	33KΩ	1	27E333-2	BTA-33K	Sound IF Amp. Decoupling
R52	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R53	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R54	39KΩ	½	27E393-2	BTS-39K	De-emphasis
R55	10Meg	½	27E106-2	BTS-10Meg	AF Amp. Grid
R56	220KΩ	½	27E1009-8	BTS-220K	AF Amp. Plate
R57	68KΩ	½	27E683-2	BTS-68K	AF Amp. Plate
R58	330KΩ	½	27E1009-9	BTS-330K	Voltage Divider
R59	150KΩ 5%	½	27E1009-12	BTS-150K-5%	Voltage Divider
R60	220KΩ	½	27E224-2	BTS-220K	Output Grid
R61	820KΩ	½	27E1009-21	BTS-820K	Sync. Sep. Plate
R62	6800Ω	½	27E682-2	BTS-6800	Voltage Divider
R63	8200Ω	½	27E822-2	BTS-8200	Sync. Amp. Plate
R64	27KΩ	½	27E273-2	BTS-27K	Phase Det. Diode Load
R65	33KΩ	½	27E333-2	BTS-33K	Phase Det. Diode Load
R66	470KΩ 20%	½	27E1009-25	BTS-470K	Phase Det. Diode Load
R67	470KΩ 20%	½	27E1009-25	BTS-470K	Phase Det. Diode Load
R68	33KΩ	½	27E333-2	BTS-33K	Phase Det. Diode Load
R69	820KΩ	½	27E1009-21	BTS-820K	Vertical Osc. Grid
R70	220KΩ 20%	½	27E1009-6	BTS-220K	Vertical Osc. Decoupling
R71	5600Ω	½	27E562-2	BTS-5600	Vertical Peaking
R72	560KΩ	½	27E562-2	BTS-560K	Vertical Osc. Plate - See Note 3
R73	1000Ω	10	27E1016-10	1 3/4A-1000	Decoupling - Wire Wound
R74	100KΩ	½	27E104-2	BTS-100K	Voltage Divider - See Note 4
R75	4.7Meg	1	27E475-2	BTA-4.7Meg	Vert. Output Grid
R76	2200Ω	½	27E222-2	BTS-2200	Vert. Output Cathode - See Note 5
R77	2200Ω	½	27E222-2	BTS-2200	Vert. Output Cathode - See Note 6
R78	220KΩ	½	27E224-2	BTS-220K	Vert. Osc. Plate - See Notes 7 and 8
R79	5600Ω	½	27E562-2	BTS-5600	Vert. Retrace Blanking Network - See Note 8
R80	200Ω	5	27E1018-12	1 3/4A-200	Vert. Centering Network - Wire Wound
R81A	22KΩ	½	†	BTS-22K	Integrator
B	8200Ω	½	23E2023-4	BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R82	470KΩ	½	27E474-2	BTS-470K	Horiz. M.V. Grid
R83	1500Ω	½	27E1009-34	BTS-1500	Horiz. M.V. Cathode
R84	100KΩ	½	27E104-2	BTS-100K	Horiz. M.V. Grid
R85	5600Ω 5%	½	27E562-2	BTS-5600-5%	Horiz. M.V. Plate
R86	270KΩ 20%	½	27E274-3	BTA-270K	Horiz. M.V. Plate
R87	33KΩ	½	27E333-2	BTS-33K	Horiz. AFC Filter
R88	8200Ω	½	27E822-2	BTS-8200	Horiz. Peaking
R89	100Ω	½	27E101-2		Parasitic Suppressor
R90	47Ω	½	27E470-2		Parasitic Suppressor
R91	1Meg 20%	½	27E105-2	BTS-1Meg	Horiz. Output Grid
R92	27KΩ	2	27E273-5	BTB-27K	Horiz. Output Screen
R93	27KΩ	2	27E273-5	BTB-27K	Horiz. Output Screen
R94	3300Ω	½	27E332-2	BTS-3300	Horiz. Feedback
R95	3.3Ω	1	27E1015-4		HV Rectifier Filament - Wire Wound
R96	1.2Meg	½	27E1009-5		HV Filter
R97	3000Ω	3	27E1016-8		Focus Coil Shunt - Wire Wound
R98	330KΩ 20%	½	27E334-2	BTS-330K	Isolation

† Items R81A, R81B, R81C, C57A, C57B And C57C Are Combined Into One Unit.
Note 2. Some Models May Use A Single 39KΩ Resistor In Place Of R38 And R39.
Note 3. Models Using A 684 Vert. Output Tube Use A 1Meg Resistor In This Application.
Note 4. Models Using A 684 Vert. Output Tube Use A 47KΩ Resistor In This Application.
Note 5. Models Using A 684 Vert. Output Tube Use A 680Ω Resistor In This Application.
Note 6. Used Only When The Vert. Output Tube Is A 684.
Note 7. Some Models Use 100KΩ Resistor In This Application.
Note 8. Not Used In All Models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.8A	800VCT @ .200ADC	5V @ 3A	6.3V @ 1.2A	22E56		P3067 P3074 ④	
		SEC. 4 6.3V @ 1.2A		SEC. 5 6.3V @ 6.5A				

④ Used for damper filament.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	185Ω	975Ω	22E55	A-8111 ③	A-3000 ③	TB0-1 ③	Vert. Block Osc.
T3	240Ω Tap 25Ω	7.5Ω Taps .3 and 5Ω SEC. 2 0Ω	22E57-6		HV0-6		Horiz. Output
T4	750Ω	9Ω	22E63	A-8123 ③	A-3038 ⑤		Vert. Output
T5A	14Ω		30E164-2	DY-7	MDF-70		Horiz. Deflection Coil
B	50Ω						Vert. Deflection Coil
T6	2.9KΩ		30E148-8				Focus Coil

③ New mounting hole.
④ Connect windings in series.

PARTS LIST CONTINUED ON PAGE 15

SENTINEL MODELS 1U425, 1U428, 1U432, 425, 428, 432

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	7KΩ	5.6Ω	460Ω	.7Ω	22E35-2	A-3850	A-2931	R0-13	③ New mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	90Ω	5.6Ω	1E45		12E90S	① Used in some models with the addition of filter choke # 22E52.
B	PM	4Ω	1E48 ①			
	CONE DIA.	V. C. DIA.				
SP2A	11 1/2"	1"				
B	11 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200ADC	100Ω		22E52 ②	C-2326 ③	C-2991 ③	TR3300 ③	② Used with PM Speaker #1E48 in some models. ③ New mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	IRC PART No.	
L2	Ant. Trans.	.1Ω	0Ω				Part of Tuner Part #20E519-4
L3	Fil. Choke	.1Ω					Part of Tuner Part # 20E519-4
L4	Fil. Choke	.1Ω					Part of Tuner Part #20E519-4
L5	Fil. Choke	.1Ω		2E78			
L6	1st Video IF	.2Ω		20E360			
L7	Fil. Choke	1.2Ω		2E92		CLA	1.5 Microhenries
L8	2nd Video IF	.2Ω		20E360			
L9	Fil. Choke	1.2Ω		2E92		CLA	1.5 Microhenries
L10	3rd Video IF	.2Ω		20E360			
L11	Grid Choke	3.8Ω		20E363-9			Wound on 4.7KΩ Resistor
L12	Fil. Choke	1.2Ω		2E92		CLA	1.5 Microhenries
L13	Plate Choke	3.7Ω		20E363-8			Wound on 10Meg Resistor
L14	4th Video IF	.2Ω		20E360			
L15	Peaking	9Ω		20E363-2			Wound on 33KΩ Resistor
L16	Peaking	25Ω		20E363-6			Wound on 10Meg Resistor
L17	Cath. Choke	1.2Ω		2E92		CLA	1.5 Microhenries
L18	Peaking	13Ω		20E363-3			Wound on 15KΩ Resistor
L19	Peaking	18Ω		20E363-10			Wound on 10Meg Resistor
L20	Sound IF	2.8Ω		20E361			Tap at 1.9Ω
L21	Ratio Det. Trans.	3.8Ω	.7Ω	20E537			
L22	Horiz. Lock Coil	64Ω		20E409			
L23	Horiz. Lin.	17Ω		20E524			
L24	Horiz. Size	.2Ω		20E639			

FUSES

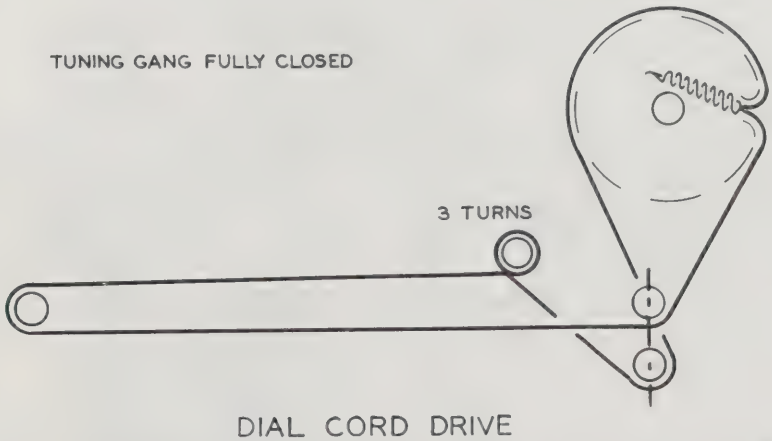
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			SENTINEL PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4A	40E8	20E584	312.250	387001	④ Used in models 425 and 428. ⑤ Used in model 432
M2A	3AG	3/8A	40E7-5 ④		312.375		
B	3AG	3A	40E8-3 ⑤	55E57 ⑤	312003		

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M3	RF Tuner	20E519-4	
M4A	Focus Magnet	62E3	Model 425
B	Focus Magnet	62E2-2	Model 432
M5	Ion Trap	15E174-4-30G	Models 425, 428
	Safety Glass	9E38	Model 425, 428
	Safety Glass	9E41	Model 432
	Knob	37E59-6	Channel Selector-Models 425, 428 (Mahogany)
	Knob	37E59	Channel Selector-Models 425, 428 (Blonde)
	Knob	37E59-5	Volume - Models 425, 428 (Mahogany)
	Knob	37E59-11	Volume - Model 425, 428 (Blonde)
	Knob	37E67-7	Contrast - Models 425, 428, 432 (Mahogany and Blonde)
	Knob	37E67-8	Brightness - Models 425, 428, 432 (Mahogany and Blonde)
	Metal Plate	36E57-3	Channel Selector Knob - Model 425
	Metal Plate	36E57-2	Channel Selector Knob - Model 428
	Metal Plate	36E58-2	Volume Control Knob - Model 425, 428
	Knob	37E62	Antenna - Model 425 (Mahogany and Blonde)
	Knob	37E61	Antenna - Model 428 (Mahogany)
	Knob	37E61-2	Antenna - Model 428 (Blonde)

TELE-TONE MODEL 206

TRADE NAME	Tele-Tone Model 206 (Ch. BJ)	
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58th St., New York 19, New York	
TYPE SET	AC Operated AM-FM Superheterodyne Receiver With Loop Antenna	
TUBES (EIGHT)	Types 6BJ6 FM RF Amp., 12AT7 FM Converter, 6BE6 AM Converter, 6BJ6 1st IF Amp. 6BA6 2nd FM IF Amp., 6T8 Det.-AVC-AF, 6AS5 Power Output, 6X4 Rectifier	
POWER SUPPLY	105-125 Volts AC	RATING .36 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1620KC		FREQ. MOD. 88-108MC



DIAL CORD DRIVE

TELE-TONE
MODEL 206

TELE-TONE
MODEL 206

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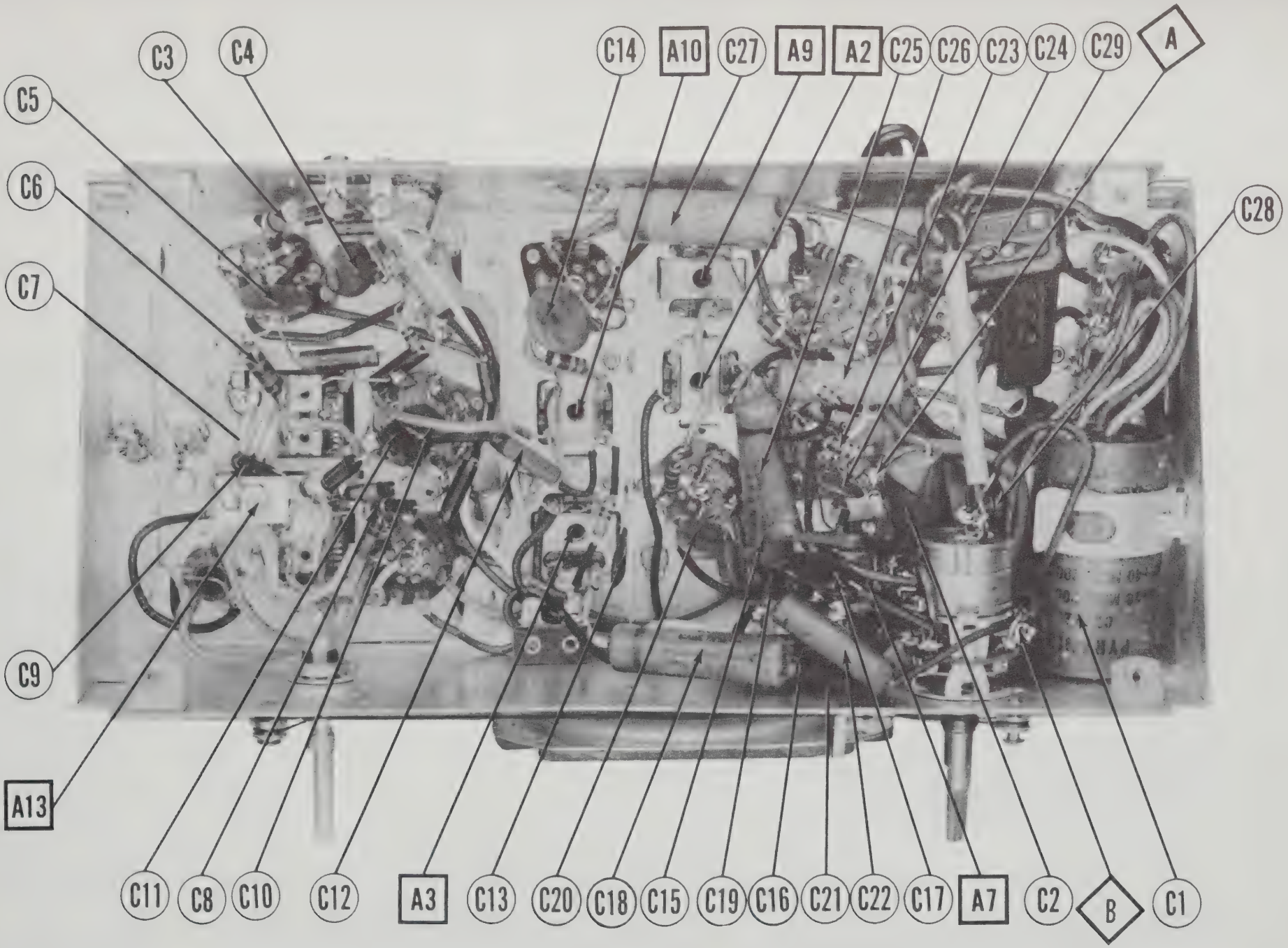
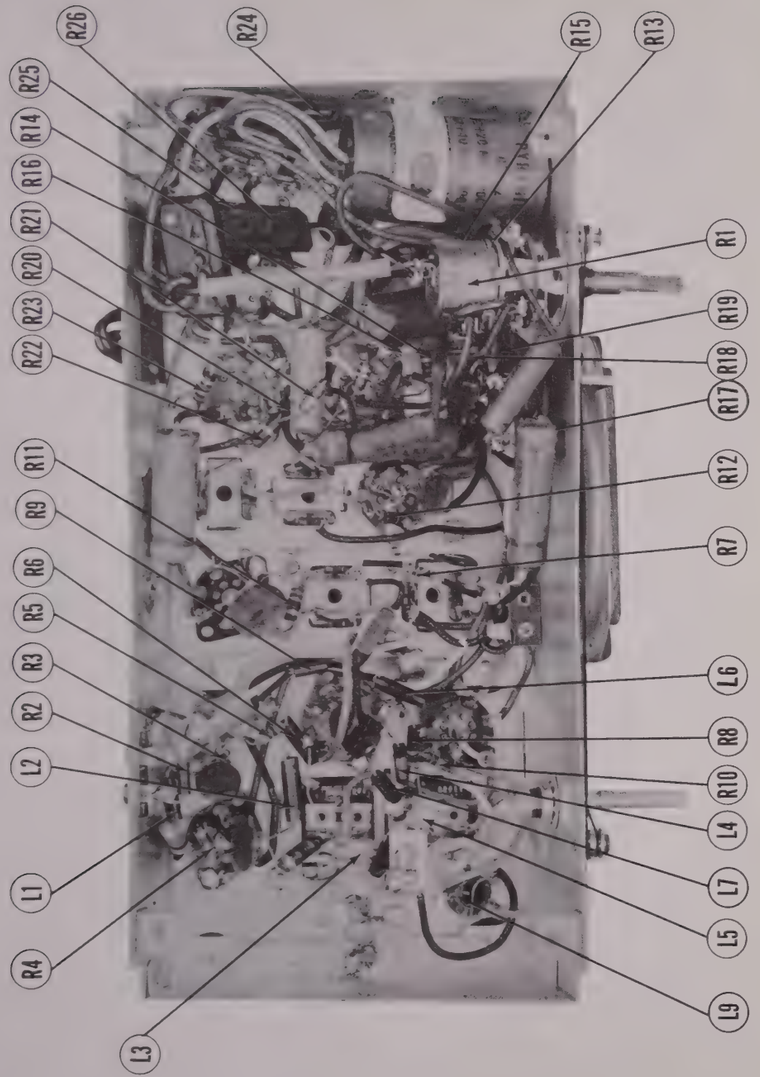
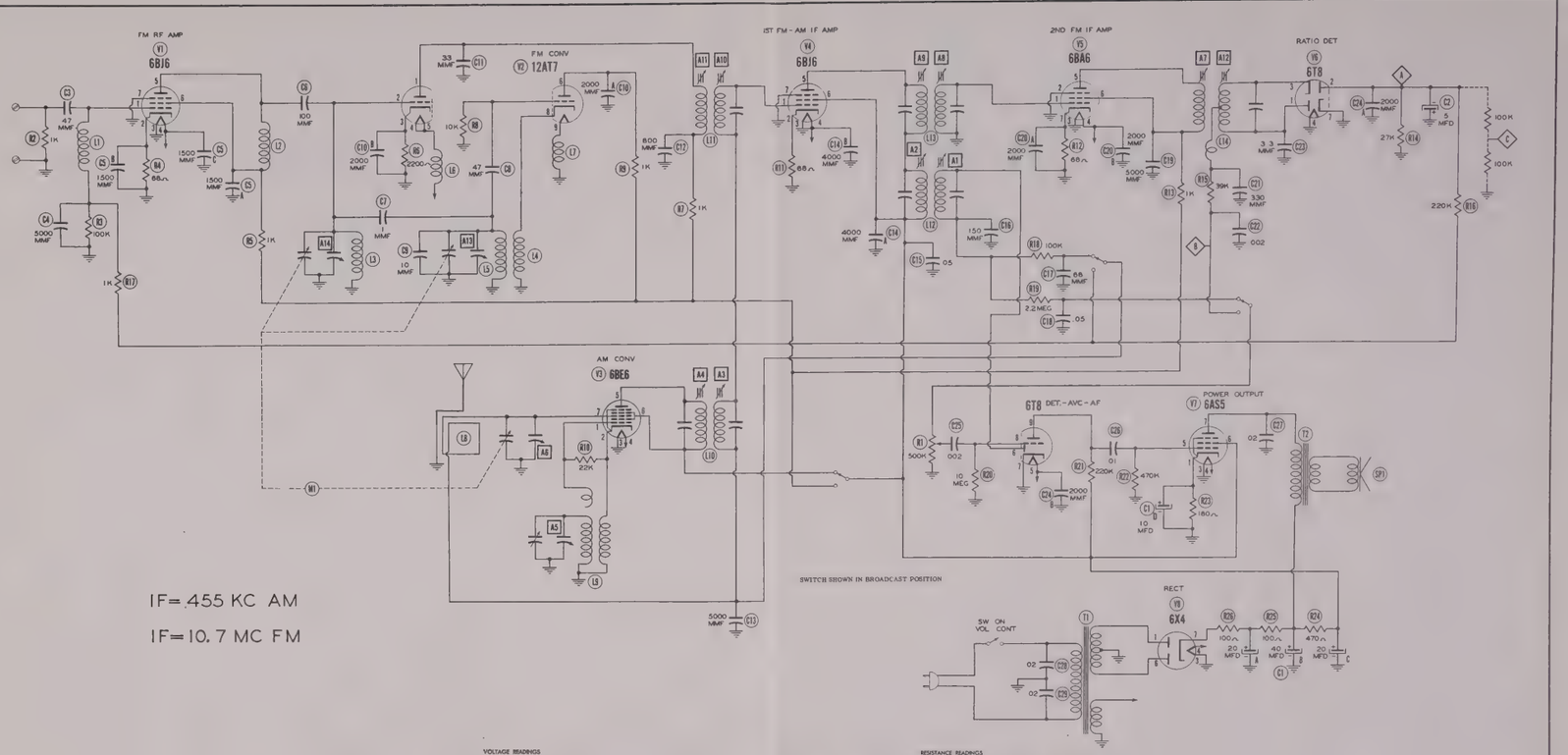

C3
C4
C14
A10
C27
A9
A2
C25
C26
C23
C24
C29
A
C5
C6
C28
C7
C9
A13
C11
C8
C10
C12
A3
C13
C20
C18
C15
C19
C16
C21
C22
C17
A7
C2
B
C1





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	9 - 2VDC a - 6VDC	7. 1VDC a 0V	0V	0V	6.3VAC	190VDC a 0V	190VDC a 0V	0V	
V 2	12AT7	195VDC a 0V	0V	12. 8VDC a 0V	0V	6.3VAC	6.3VAC	185VDC a 0V	9V - 1VDC a - .1VDC	0V	0V
V 3	6BE6	9a - 10VDC	0V	0V	0V	6.3VAC	9 0V a110VDC	9 0V a - .1VDC			
V 4	6BJ6	9 - 2VDC a - .1VDC	- .1VDC	0V	0V	6.3VAC	100VDC a110VDC	100VDC a110VDC	0V		
V 5	6BA6	0V	0V	0V	0V	6.3VAC	190VDC a 0V	190VDC a 0V	1 VDC a 0V		
V 6	6T8	- .4VDC 87. 8VDC	-1VDC	- .4VDC	0V	6.3VAC	- 8VDC 100VDC	0V	- .6VDC	250VDC a 255VDC	
V 7	6AS5	a 8. 8VDC	0V	0V	0V	6.3VAC	0V a110VDC	112VDC a110VDC			
V 8	6X4	350VDC	0V	0V	0V	6.3VAC	0V	350VDC	328VDC		

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	80KΩ a 11. 7KΩ	68Ω	- 0Ω	1Ω	11. 7KΩ a Inf.	11. 7KΩ a Inf.	0Ω		
V 2	12AT7	a Inf.	0Ω	2. 2KΩ	2Ω	11. 7KΩ a Inf.	11. 7KΩ a Inf.	10KΩ	2. 4Ω	2Ω
V 3	6BE6	22KΩ a 100KΩ	7Ω	0Ω	1Ω	8 Inf. a 1670Ω	8 80KΩ a 3. 3Meg			
V 4	6BJ6	a 3. 3Meg	68Ω	0Ω	1Ω	1670Ω a Inf.	1670Ω a Inf.	0Ω		
V 5	6BA6	1Ω a Inf.	0Ω	0Ω a 1Meg	1Ω	11. 7KΩ a Inf.	11. 7KΩ a Inf.	68Ω		
V 6	6T8	a Inf.	27KΩ	a Inf.	0Ω	1Ω	a 1. 1Meg	0Ω	10Meg	1220KΩ
V 7	6AS5	180Ω	470KΩ	0Ω	1Ω	470KΩ	1670Ω	1410Ω		
V 8	6X4	80Ω	Inf.	0Ω	1Ω	Inf.	90Ω	80KΩ		

‡ TAKEN IN FM POSITION
▲ TAKEN IN AM POSITION
† MEASURED FROM PIN 7 OF V 8

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer 1 3/32 inch to the right of the center of the volume control shaft.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455MC (400 % Mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1630KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	"	Tune for max. output.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 10(MEG) (1%) resistors in series from Point A to chassis. The junction of these two resistors is alignment Point C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (Unmod.)	FM (CW)	Tuning gang fully open.	DC probe to Point ◇. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
5.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to Point ◇. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 % modulation and 450KC sweep. Use 120 % sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (450KC SWP)	FM (CW)	Point of non-interference	Vert. amp. to Point ◇. Low side to chassis.	A7, A8, A9	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per figure 1.
5.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A 11	"
6.		"	"	"	"	Vert. amp. to Point ◇. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	330Ω carbon resistors	High side thru 330Ω to ungrounded "FM" antenna terminal. Low side to chassis.	109MC (Unmod.)	FM	Tuning gang fully open.	DC probe to Point ◇. Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	87.5MC	FM	Tuning gang fully closed.	"	L5	Expand or compress coil turns for maximum deflection. Repeat steps 7 and 8 until no further improvement can be made.
9.	"	"	106MC	"	Tune for max. output.	"	A14	Adjust for maximum deflection.
10.	"	"	90MC	"	"	"	L3	Expand or compress coil turns for max. deflection. Repeat steps 9 and 10 until no further improvement can be made.

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD RETMA DESIGNATION	BASE DIAG. NO. TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter 1st FM, AM IF	6BE6	6BE6	7CH	
V4	FM IF Amp. 2nd FM Det. AVC-AF Amp.	6BJ6	6BJ6	7CM	
V5	Power Output	6AR8	6AR5	7CV	
V6	Rectifier	6X4	6X4	8BS	

CHASSIS—TOP VIEW

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: ARCOVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	300	CE-22	PSE565/40-32		ED3-4225C		+TVL-3546	Filter Blue
B	20	300		PSE350/20-32		SD2055		TVA-1091	Filter Green
C	20	200							Filter Red
D	10	25	CE-19						Output Cath. Yellow
C2	47	350	CC-047-8	S147	D8-470	SWSQ5	GP1K-47	19C25	Diode Load Cap
C3	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	29C1	RF Coupling
C4	1500		CC-3-0		DD-152	1W5D15	811-0015	29C3	AVC Filter
B	1500			BPD-3X0015	DD-152	1W5D15	811-0015	29C3	FM RF Amp. Dec.
C	1500		CC-1Q1-7	S100	DD-152	1W5D15	811-0015	29C3	FM RF Amp. Cath.
C5	100		CS1P-1		DD-101	1W5T1	GP1K-100	19C21	FM RF Amp. Fil.
C6	1		CE-22		DE-010-0				RF Coupling
C7	100		CS1P-1		DD-101		GP1K-47	19C25	Osc. Grid Coupling
C8	47	150	CC-047-8	S147	D8-470	SWSQ5	NPOK-10	19C25	Osc. Grid Cap
C9	1000			BPD-1X0102	DD-2-102	1W5D2	811-2X0102	29C5	Cathode Bypass
C10A	2000		CC-2-1	BPD-2X0002	DD-2-202	1W5D2		29C5	Conv. Cath.
B	2000								Fixed Trimmer
C11	500	500	CME-053-9	S053PO	TC2-53	1W5T8	NPOL-53	29C13	Osc. Plate Dec.
C12	330	500	CME-033-9	S033PO	TC2-33	1W5T8	NPOL-33	29C11	Osc. Plate Dec.
C13	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	29C5	AVC Filter
C14A	4000		CC-2-2	BPD-2X0004	DD-2-502	1W5D2	822-2X004	29C2	RF Bypass
B	4000					1W5D2			IF Bypass
C15	.05	400	CP-503-1	P488-05	DP-503	PTE5R5		4TM-55	RF Bypass
C16	150	500	CM-151-1	S468-00005	D5-151	SWST15	GP2K-150	1FM-315	Diode RF Filter
C17	.05	400	CP-503-1	P488-05	DP-503	PTE5R5	GP1K-46	4TM-55	AVC Filter
C18	.05	400	CP-503-1	P488-05	DP-503	PTE5R5		4TM-55	AVC Filter
C19	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Dec.
C20A	4000		CC-2-1	BPD-2X002	DD-2-202	1W5D2	811-2X002	29C5	2nd IF Cath.
B	2000					1W5D2		29C5	2nd IF Bypass
C21	330	500	CM-331-8	S468-0003	D8-331	SWST3	GP2K-330	19C14	Diode Load Cap
C22	3.3	600	CP-338-1	P488-3R3	DP-338	PTE3D2	GP2M-3R3	4TM-D2	De-emphasis
C23	3.3	600	CP-338-1	P488-3R3	DP-338	PTE3D2	GP2M-3R3	4TM-D2	Det. Bypass
C24A	2000		CC-2-1	BPD-2X002	DD-2-202	1W5D2	811-2X002	29C5	RF Bypass
B	2000					1W5D2			Ratio Det.-AF Amp. Fil.
C25	1000	600	CP-102-2	P488-002	DP-202	PTE5R5	GP2M-002	4TM-D2	Audio Coupling
C26	.01	400	CP-103-1	P488-01	D5-103	PTE5R1		4TM-51	Audio Coupling
C27	.02	400	CP-203-20	P1088-02		PTE1R5R2		1KB-52	Output Plate Byp.
C28	.02	400	CP-203-1	P488-02	DP-203	PTE5R2		4TM-52	Limit Filter
C29	.02	400	CP-203-1	P488-02	DP-203	PTE5R2		4TM-52	Limit Filter

* Use Mounting Strap.

CONTROLS

ITEM No.	RATING: RESIST.	RATING: WATTS	REPLACEMENT DATA: Tele-Tone PART No.	REPLACEMENT DATA: IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	500KΩ	1	VC-17				Volume Control And SW Ganged With AM-FM Switch

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	100Ω		RC-101-1	BTS-1000	Antenna Loading
R3	100KΩ		RC-104-1		FM RF Amp. Grid
R4	10KΩ		RC-103-3		FM RF Amp. Decoupling
R5	100Ω		RC-101-1	BTS-1000	FM RF Amp. Decoupling
R6	2200Ω		RC-222-3	BTS-2200	FM Mixer Cathode
R7	100Ω		RC-101-1	BTS-1000	FM Mixer Decoupling
R8	10KΩ		RC-103-3		FM Osc. Grid
R9	100Ω		RC-101-1	BTS-1000	FM Osc. Plate
R10	22KΩ		RC-223-1		AM Osc. Grid
R11	68Ω		RC-680-1		AM Osc. Cathode
R12	68Ω		RC-680-2		2nd FM IF Amp. Cathode
R13	100Ω		RC-101-1	BTS-1000	2nd FM IF Amp. Decoupling
R14	47KΩ		RC-473-3	BTS-47K	Ratio Det. Diode Load
R15	39KΩ		RC-393-2	BTS-39K	De-emphasis
R16	220KΩ		RC-224-1	BTS-220K	AVC Network
R17	330KΩ		RC-334-1	BTS-330K	AVC Network
R18	100KΩ		RC-104-1	BTS-1000	Diode Filter
R19	2.2MEG		RC-225-1	BTS-2.2MEG	Diode Filter
R20	100KΩ		RC-104-1	BTS-100KEG	AF Amp. Grid
R21	220KΩ		RC-224-1	BTS-220K	AF Amp. Plate
R22	470KΩ		RC-474-1	BTS-470K	Output Grid
R23	180Ω	2	RC-181-2	BTS-180	Output Cathode
R24	1KΩ	2	RW-102-8	BW-2-1000	Filter - Wire Wound
R25	100Ω	2	RW-101-8	BW-2-100	Filter - Wire Wound
R26	100Ω	2	RW-101-8		Surge Limiter - Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 60CY	350VCT @ 70MA	6.3V @ 3.4A		TR-21			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	3.3KΩ	.4Ω	.04Ω	A-3897 ①	A-3930 ①	R10-8 ①	① Bend mounting tabs down, file smooth and mount on original bracket.

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
SP1	CONE DIA.	V. C. DIA.	SP-41-10B	ST-415 ② Mod. P4-X	4A1 ②	② Use universal mounting bracket
SP2	3 15/16"	9/16"				

PHOTOFACT* Folder

TELE-TONE MODELS

TV324, TV325, TV326, TV328, TV329, TV335, TV336, TV340, TV345

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Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL TV336

TELE-TONE MODELS
TV324, TV325, TV326, TV328, TV329, TV335, TV336, TV340, TV345

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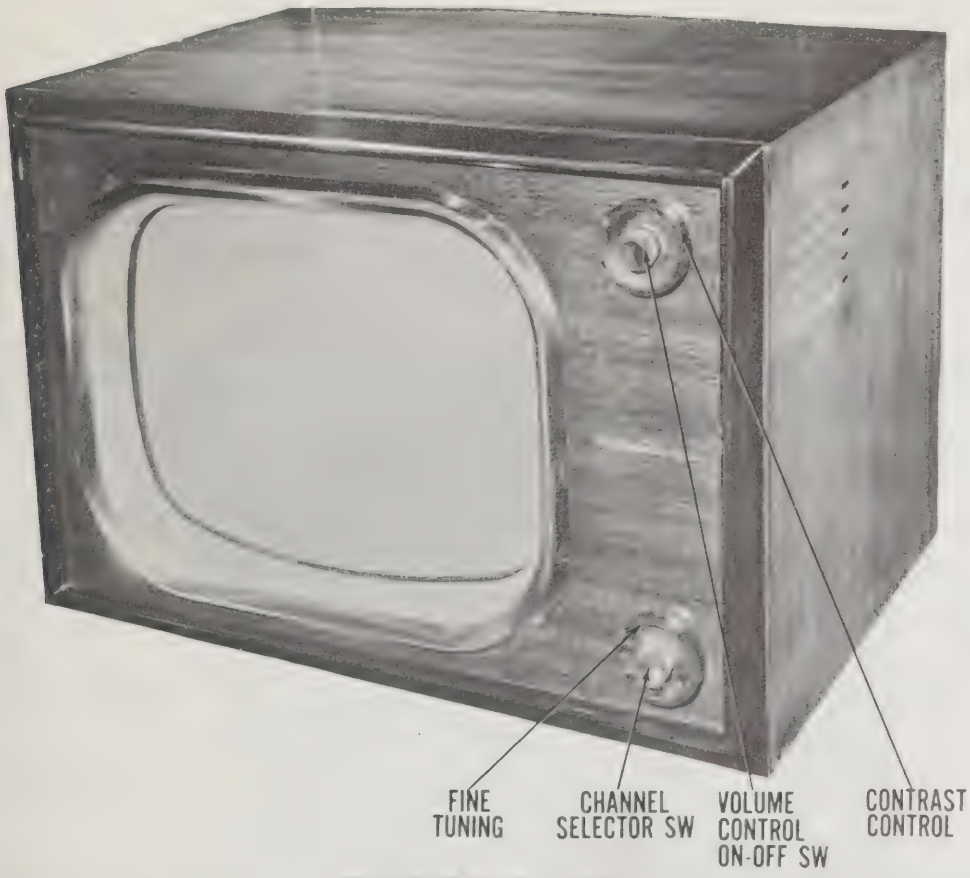
PHOTOFACT* Folder

TELE-TONE MODELS 324, 325, 326, 328, 329, 335, 336, 340, 345

TELE-TONE MODELS 324, 325, 326, 328, 329, 335, 336, 340, 345



TELE-TONE MODEL TV 336

TRADE NAME	Tele-Tone Models	TV324 (Ch. "TAP", "TAP-1"), TV325 (Ch. "TAP", "TAP-2"), TV326, TV328, TV329, (Ch. "TAP"), TV335 (Ch. "TAP","TAP-2"), TV336 (Ch. "TAP", "TAP-1") TV340, TV345 (Ch. "TAP-2")
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58 St., New York 19, New York	
TYPE SET	Television Receiver	
TUBES	Nineteen	
POWER SUPPLY	110-120 Volts AC - 60 Cycle	
RATING	1.25 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13	

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Voltage And Resistance Measurements 8

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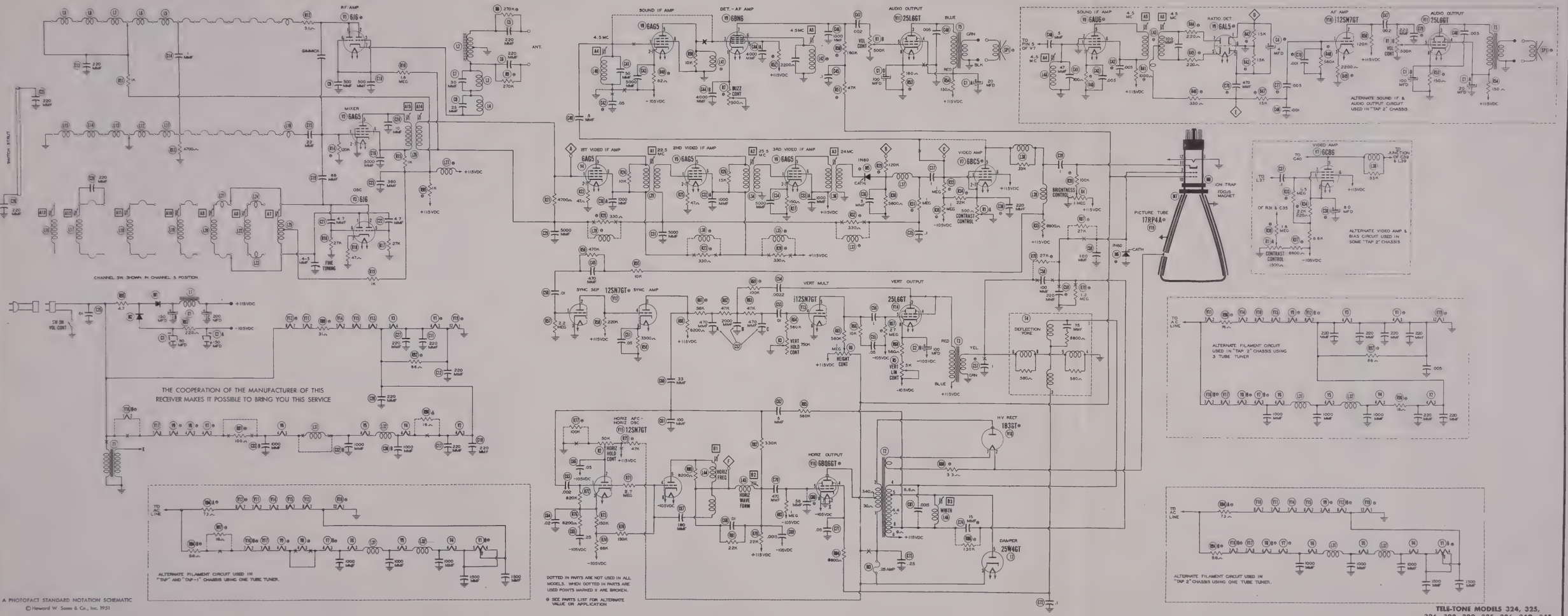
DATE 3-51 SET 127 FOLDER 12



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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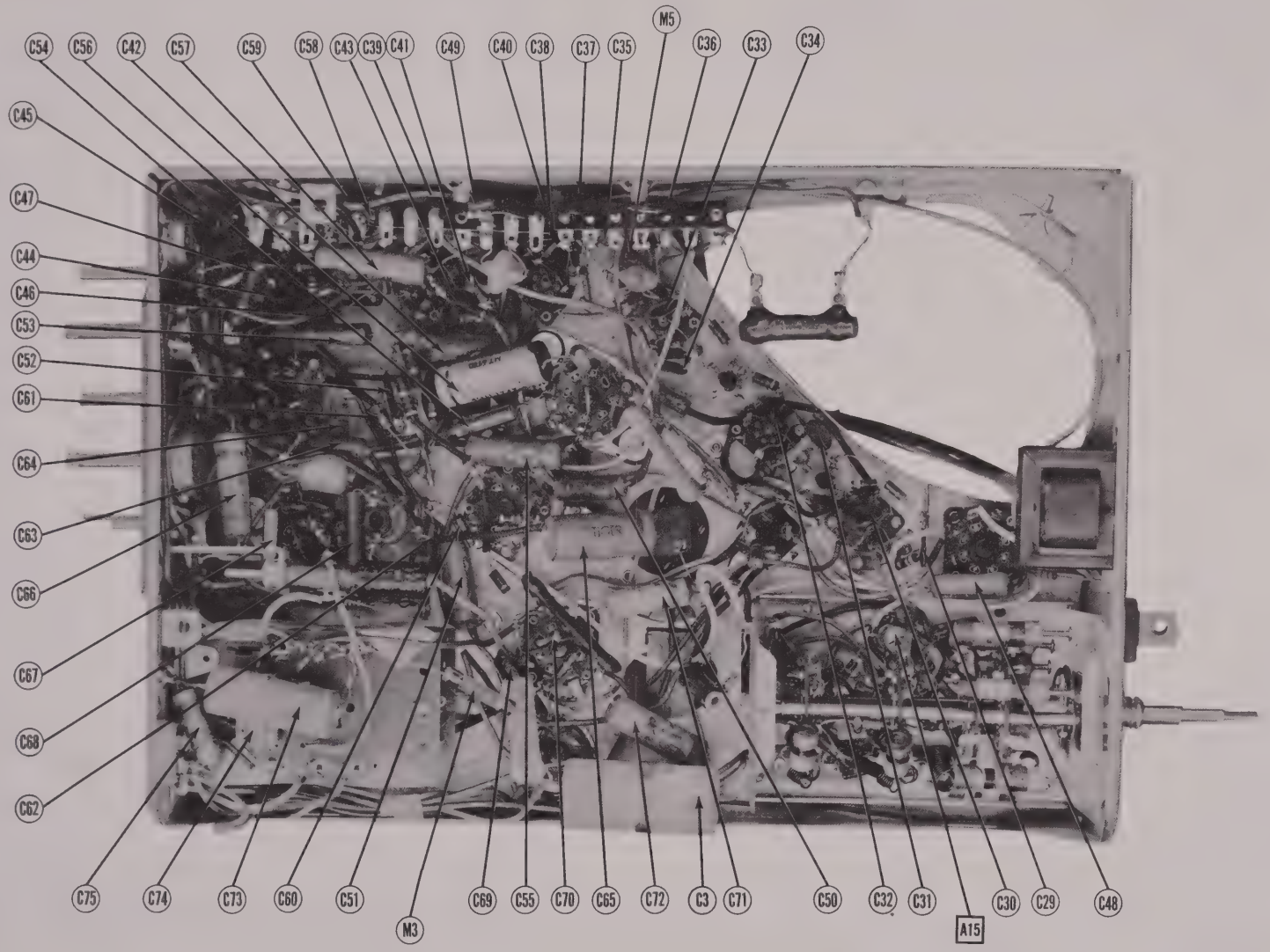
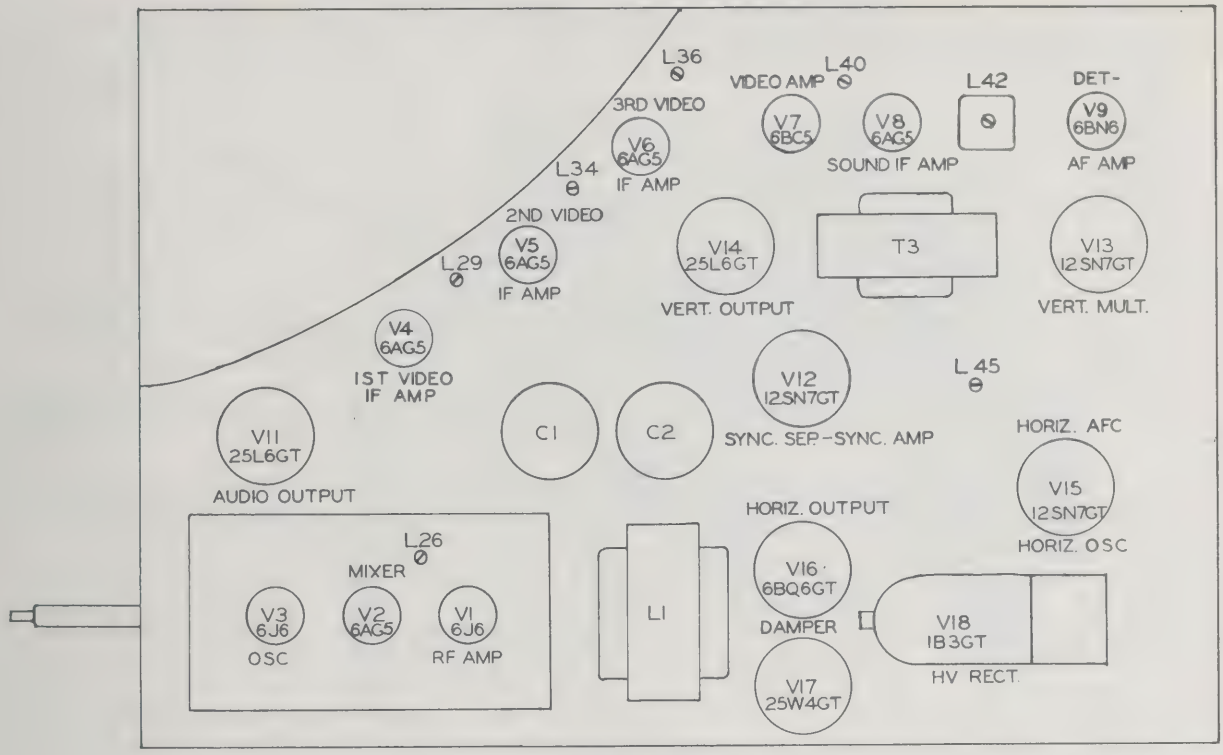
TELE-TONE MODELS 324, 325, 326, 328, 329, 335, 336, 340, 345

TELE-TONE MODELS 324, 325, 326, 328, 329, 335, 336, 340, 345

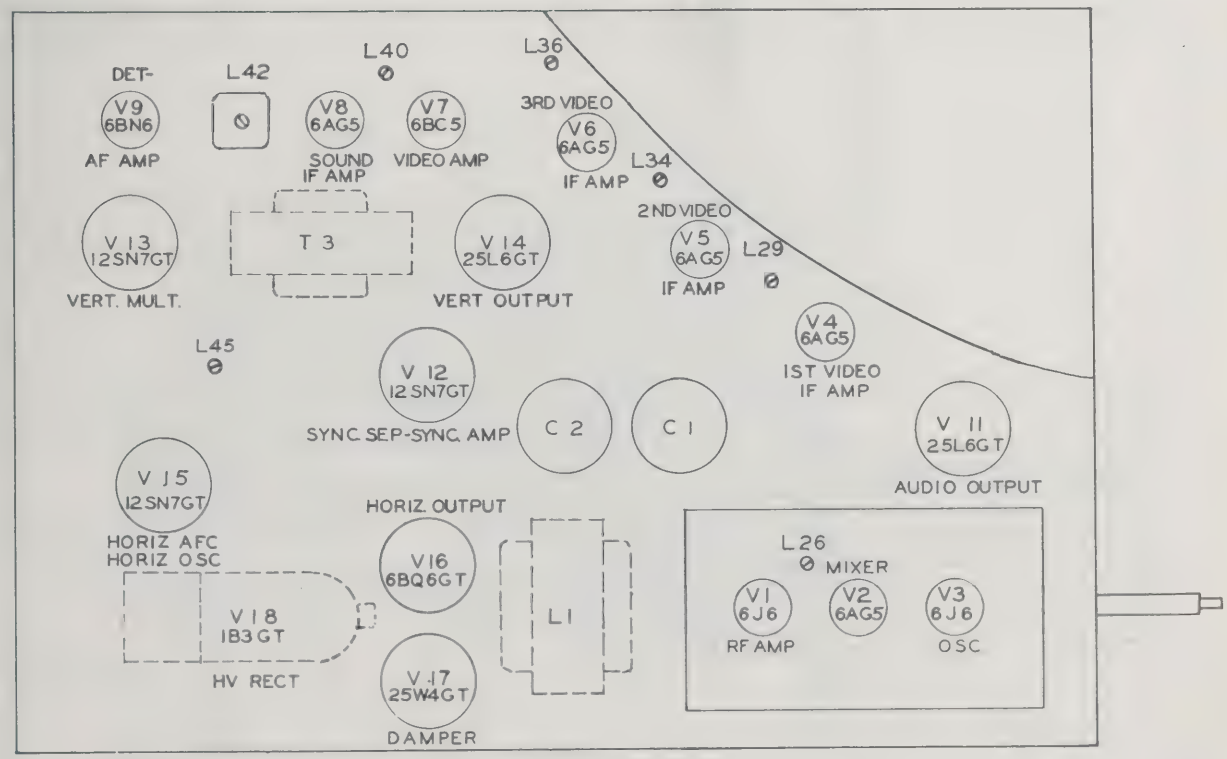
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Turn the channel selector to channel 13. If interference is encountered, try another channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001MFD	High side to Point A. Low side to chassis.	22.5MC (Unmod.)	13	DC probe to Point (B). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	25.5MC	13	"	A2	"
3.	"	"	24MC	13	"	A3	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to Point A. Low side to chassis.	24MC (10MC SWP)	21.25MC 22.25MC 25.75MC	13 (See note above video IF alignment)	Vert. amp. to Point (B). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1, A2, A3 for proper response.

SOUND IF ALIGNMENT FOR "TAP AND TAP - 1" CHASSIS

Tune in the best available TV station and adjust the contrast control for a normal picture.
Adjust the sound IF coil (A4) and the quadrature coil (A5) for maximum audio of best quality. Adjust the "buzz" control for MINIMUM intercarrier buzz.

SOUND IF ALIGNMENT FOR "TAP - 2" CHASSIS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to Point C. Low side to chassis.	4.5MC (Unmod.)	Any channel not used locally	DC probe to Point (D). Common to chassis.	A4, A5	Adjust for maximum deflection.
6.	"	"	"	"	DC probe ot Point (E). Common to chassis.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

After alignment is complete, tune in a TV station and retouch A6 for MINIMUM intercarrier buzz.

OSCILLATOR ALIGNMENT FOR 3 TUBE TUNER (PART NO. TAS 551-D)

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The seven oscillator coils are so arranged that channels 3 thru 12 are paired with one variable and one fixed coil, that is, channel 3 and 4, 5 and 6, etc., which have sufficient range of adjustment to cover two channels. Adjust the oscillator coils to the channel available in the area where the set is to be operated.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. amp. to Point (B). Low side to chassis.	A7	Adjust to place sound marker as shown in figure 2. The video carrier should be at 50%. If response curve differs greatly from figure 2, adjust A14 and A15 for proper response.
			63MC (10MC SWP)	61.25MC 65.75MC	3 or 4		A8	
			69MC (10MC SWP)	67.25MC 71.75MC				
			79MC (10MC SWP)	77.25MC 81.75MC	5 or 6		A9	
			85MC (10MC SWP)	83.25MC 87.75MC				
			177MC (10MC SWP)	175.25MC 179.75MC	7 or 8		A10	
			183MC (10MC SWP)	181.25MC 185.25MC				
			189MC (10MC SWP)	187.25MC 191.75MC	9 or 10		A11	
			195MC (10MC SWP)	193.25MC 197.75MC				
			201MC (10MC SWP)	199.25MC 203.75MC	11 or 12		A12	
			207MC (10MC SWP)	205.25MC 209.75MC				
			213MC (10MC SWP)	211.25MC 215.75MC	13		A13	

THE RF PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

TUNER ALIGNMENT FOR 1 TUBE TUNER (PART NO. TAS 540)

There are four adjustmentson this tuner, they are:
A16, High band oscillator trimmer
A17, Low band oscillator trimmer
A18, High band coupling adjustment
A19, Low band coupling adjustment
If the extreme channel on either band is found to be outside the tuning range, the appropriate oscillator trimmer should be adjusted to bring it in. Care should be exercised to make sure the channel on the opposite end is not lost.
The coupling adjustment (A18 and A19) require the use of a scope. The scope should be connected through a high impedance detector probe (figure 3) to Point A. The sweep generator is connected across the antenna input terminals. The appropriate coupling adjustment is adjusted for a response curve similar to figure 4. If necessary A14 and A15 may be adjusted to obtain the proper curve. If adjustment of A14, A15 and the coupling adjustments (A18 and A19) will not render the proper response, the entire tuner should be returned to the factory for repair or replacement.

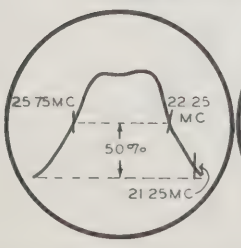


FIG. 1

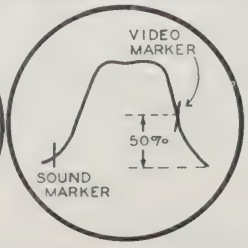


FIG. 2

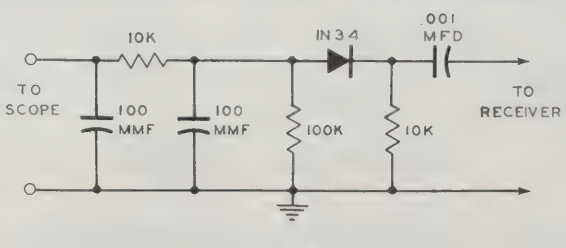


FIG. 3

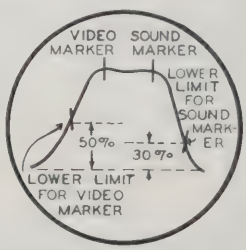
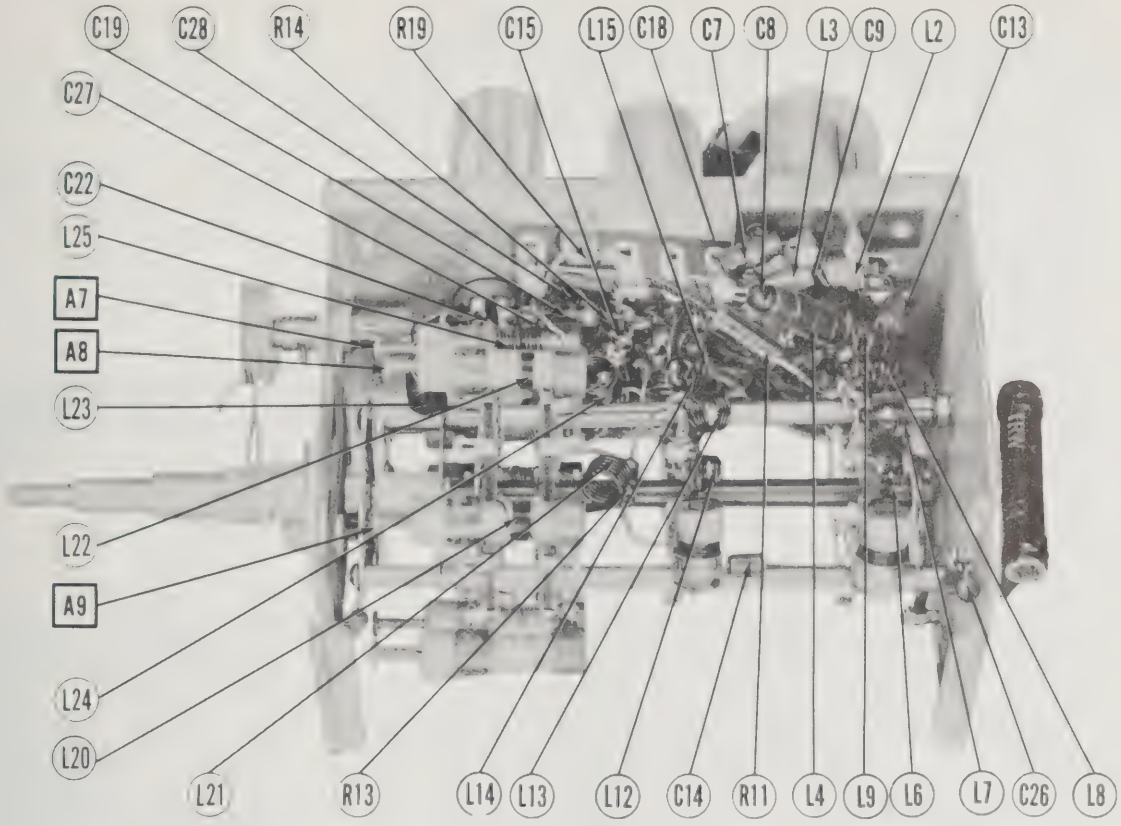
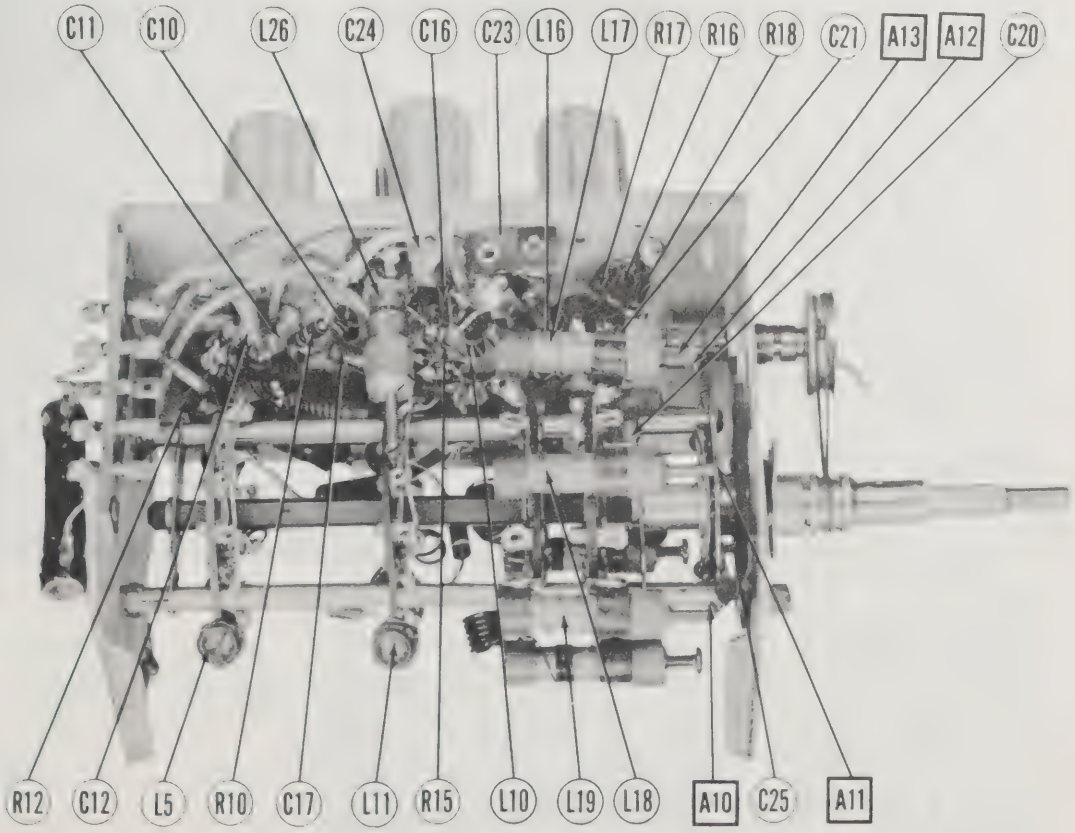


FIG. 4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	100VDC	100VDC	6VAC	12VAC	-.3VDC	-.3VDC	0V		
V 2	6AG5	-1VDC	0V	18VAC	25VAC	105VDC	105VDC	0V		
V 3	6J6	95VDC	95VDC	18VAC	12VAC	§-1.9VDC	§-2.4VDC	.3VDC		
V 4	6AG5	-.2VDC	.3VDC	25VAC	31VAC	110VDC	110VDC	.3VDC		
V 5	6AG5	-.2VDC	.3VDC	31VAC	38VAC	112VDC	112VDC	.3VDC		
V 6	6AG5	0V	.9VDC	38VAC	44VAC	115VDC	115VDC	.9VDC		
V 7	6BC5	0V	2.6VDC	63VAC	69VAC	105VDC	115VDC	2.6VDC		
V 8	6AG5	#30VDC	#32VDC	69VAC	75VAC	#125VDC	#125VDC	#32VDC		
V 9	6BN6	8VDC 0V	0V	75VAC	82VAC	85VDC	0V	200VDC		
V 10	12SN7GT	NOT USED IN ALL MODELS								
V 11	25L6GT	0V	80VAC	105VDC	110VDC	0V	0V	105VAC	8.2VDC	
V 12	12SN7GT	1VDC	20VDC	0V	20VDC	75VDC	20VDC	105VAC	117VAC	
V 13	12SN7GT	0V	6VAC	0V	-2.6VDC -3VDC	140VDC 55VDC	0V	18VAC	30VAC	
V 14	25L6GT	#30VDC #25VDC	42VAC	#245VDC #220VDC	#245VDC #220VDC	#2VDC	#55VDC #30VDC	67VAC	#60VDC #50VDC	
V 15	12SN7GT	#2.2VDC #1VDC	#250VDC #135VDC	#50VDC #30VDC	#-4VDC #-1.3VDC	#210VDC	#25VDC	30VAC	42VAC	
V 16	6BQ6GT	#210VDC	6.3VAC	#245VDC	#150VDC	#5.7VDC	#245VDC	0V	#25VDC	TOP CAP *
V 17	25W4GT	0V	0V	270VDC	0V	115VDC	0V	117VAC	82VAC	
V 18	1B3GT	* DO NO MEASURE								
V 19	17RP4A	0V	0V	PIN 10 270VDC	PIN 110VDC	11 0V	PIN 12 6VAC			

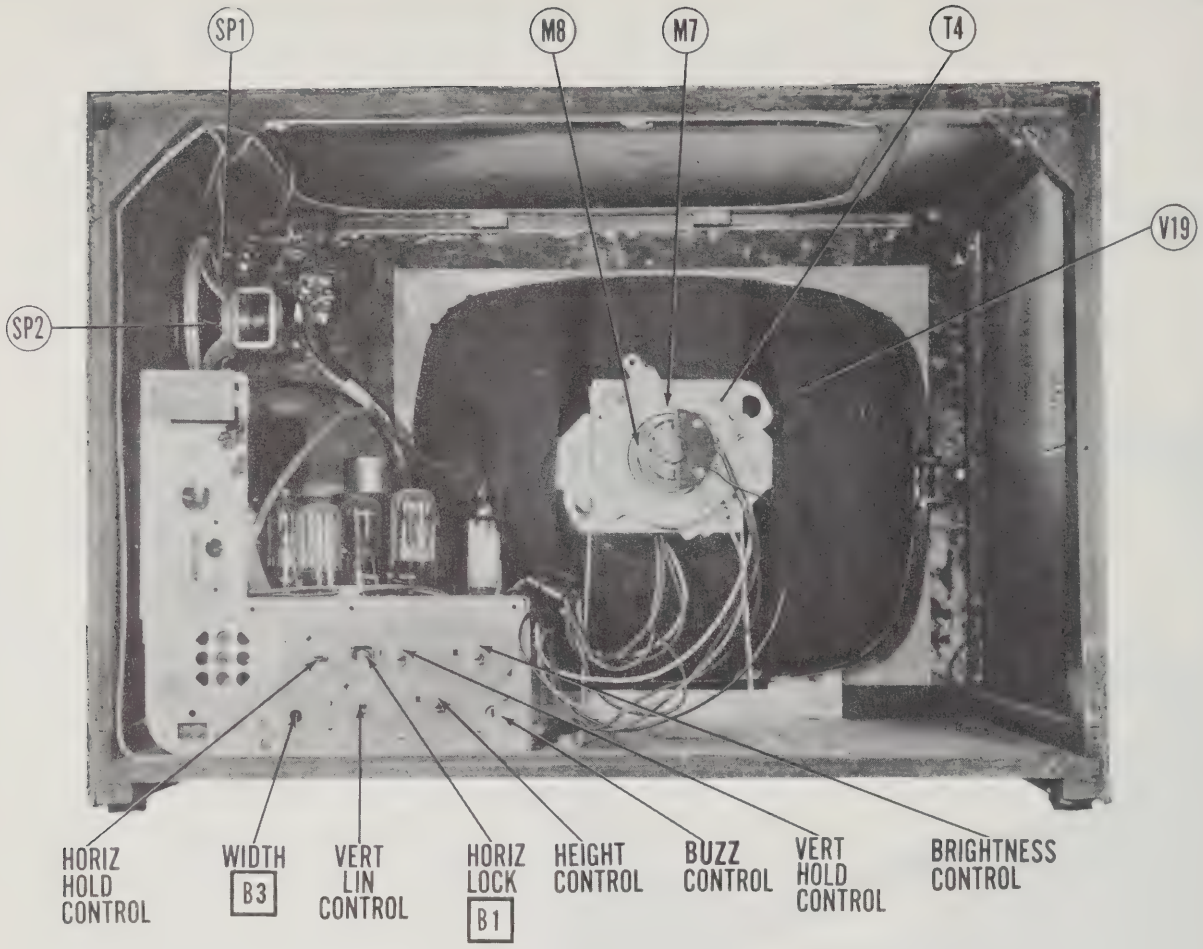
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM OUTPUT OF M 2
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†1KΩ	†1KΩ	8Ω	10Ω	2.8Meg	2.8Meg	.2Ω		
V 2	6AG5	120KΩ	0Ω	12Ω	15Ω	†1KΩ	†1KΩ	0Ω		
V 3	6J6	†1KΩ	†1KΩ	12Ω	10Ω	27KΩ	27KΩ	47Ω		
V 4	6AG5	1Meg	47Ω	15Ω	18Ω	†660Ω	†660Ω	47Ω		
V 5	6AG5	1Meg	47Ω	22Ω	25Ω	†330Ω	†330Ω	47Ω		
V 6	6AG5	.6Ω	150Ω	27Ω	29Ω	†30Ω	†30Ω	150Ω		
V 7	6BC5	1Meg	1.5KΩ	48Ω	50Ω	†6.8KΩ	†30Ω	1.5KΩ		
V 8	6AG5	#200Ω	#300Ω	50Ω	48Ω	3.3Ω	0Ω	#300Ω		
V 9	6BN6	500Ω 0Ω	3.3Ω	46Ω	48Ω	†2.2KΩ	3.3Ω	▲225KΩ		
V 10	12SN7GT	NOT USED IN ALL MODELS								
V 11	25L6GT	Inf.	38Ω	†385Ω	†180Ω	0Ω	Inf.	40Ω	180Ω	
V 12	12SN7GT	2.2Meg	†220KΩ	0Ω	†220KΩ	†8.2KΩ	3300Ω	40Ω	42Ω	
V 13	12SN7GT	Inf.	8Ω	0Ω	560KΩ 1.5Meg	†560KΩ †1.6Meg	0Ω	12Ω	18Ω	
V 14	25L6GT	#220Ω	23Ω	†680Ω	†680Ω	#2.7Meg	#5.2KΩ #220Ω	27Ω	#5.8KΩ #780Ω	
V 15	12SN7GT	#800KΩ	†0Ω †40KΩ	#200KΩ	#220KΩ	†22KΩ	#220Ω	18Ω	23Ω	
V 16	6BQ6GT	†22KΩ	.4Ω	†30Ω	†6.9KΩ	#1Meg	†80Ω	0Ω	#220Ω	TOP CAP ▲ 30Ω
V 17	25W4GT	Inf.	Inf.	1Meg	Inf.	†40Ω	Inf.	42Ω	46Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲370Ω
V 19	17RP4A	0Ω	1.2Meg	PIN 10 ▲ 0Ω	PIN 370KΩ	11 100KΩ	PIN 12 8Ω			

† MEASURED FROM OUTPUT OF M 1
# MEASURED FROM OUTPUT OF M 2
Ξ MEASURED FROM PIN 3 OF V 17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical input lead of an oscilloscope through a 22KΩ isolating resistor to Point F.

Adjust the horizontal stabilizing slug (B2) until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 5. If necessary adjust B 1 to keep the picture synchronized while adjusting B2.

Remove the oscilloscope and turn the horizontal hold control to maximum counter-clockwise. Turn B1 clockwise 5 turns. If the picture does not fall out of sync. momentarily interrupt the signal by switching to another channel and back again.

Adjust B1 counter-clockwise until the picture resolves into 2 1/2 to 4 1/2 sloping bars.

The picture should pull into sync. after a slight clockwise rotation of the hold control and should remain in sync. over most of the hold control range. If it does not repeat the entire oscillator alignment.

Adjust the width slug (B3) until the picture fills the mask horizontally.

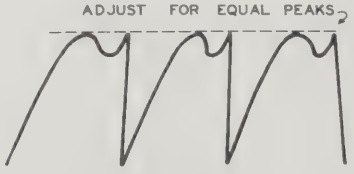
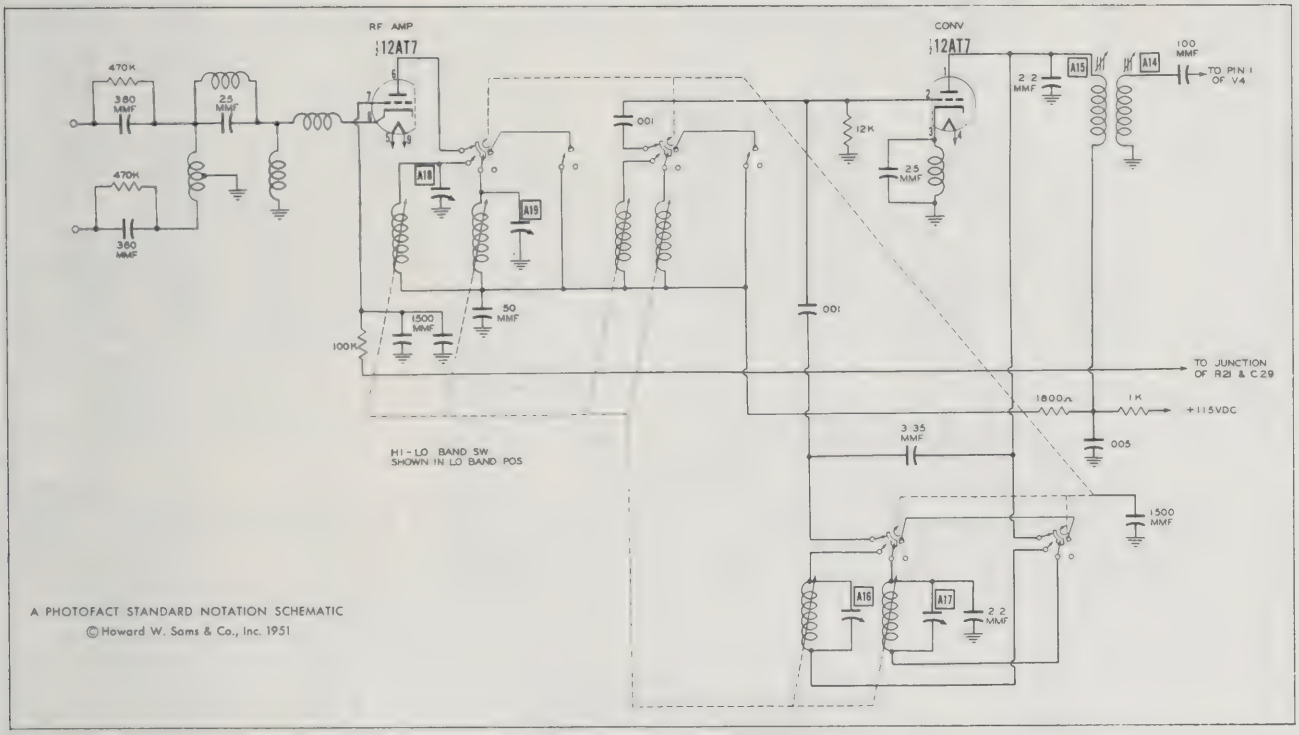


FIG. 5

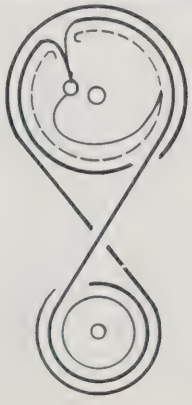


ALTERNATE TUNER SCHEMATIC

DISASSEMBLY INSTRUCTIONS

1. Remove four push - on type control knobs.
2. Remove six wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Disconnect yoke cable.
6. Disconnect picture tube socket.
7. Remove three 3/8" hex head bolts from chassis. Remove chassis.
8. Remove two 1/4" hex nuts from speaker. Remove speaker.

NOTE : FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



FINE TUNING DRIVE CORD STRINGING

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: TELE TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6J6	6J6	7BF	
B	RF Amp. -Conv.	12AT7	12AT7	9A	Alternate Tuner
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp	6AG5	6AG5	7BD	
V6	3rd Video IF Amp	6AG5	6AG5	7BD	
V7A	Video Amplifier	6BC5	6BC5	7BD	
B	Video Amplifier	6CB6	6CB6	7CM	Alternate Tube
V8A	Sound IF Amp.	6AG5	6AG5	7BD	
B	Sound IF Amp.	6AU6	6AU6	7BK	Used in Tap-2 Chassis Only
V9A	Det.-AF Amplifier	6BN6	6BN6	7DJ	
B	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp -Sync Amp	12SN7GT	12SN7GT	8BD	Used in Tap-2 Chassis Only
V11	Audio Output	25L6GT	25L6GT	7AC	
V12A	Sync Sep.-Sync Amplifier	12SN7GT	12SN7GT	8BD	
B	Sync. Sep. - Vert Oscillator	12SN7GT	12SN7GT	8BD	Used in Tap - 2 Chassis Only
V13	Vert. Mult.	12SN7GT	12SN7GT	8BD	
V14	Vert. Output	25L6GT	25L6GT	7AC	
V15	Hor. AFC-Hor. Osc	12SN7GT	12SN7GT	8BD	
V16A	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
B	Horiz. Output	25BQ6GT	25BQ6GT	6AM	Alternate
V17	Damper	25W4GT	25W4GT	4CG	
V18A	HV Rectifier	1B3GT	1B3GT	3C	
B	HV Rectifier	1X3GT	1X3GT	7CB	Alternate
V19A	Picture Tube	17RP4A	17RP4A	12D	
B	Picture Tube	16RP4	16RP4	12D	Alternate

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	150	TCE152-D	AFH43040D		UPT427			▲ Output Decoupling
B	150	150		20B					■ Filter
C	200	150							▲ Filter
D	100	30							Output Cathode
C2A	150	150	TCE156-D	AF4025D		UPE15D15			▲ Filter
B	100	25							TVA-1207 ▲ Vert. Output Cath.
C3	80	150	TCE155-D	PRS150/100		BRE80I5			TVA-1418 Filter
C4	4	25		PRS150/4		BR550			TVA-1303 Stabilizing Cap *
C5	220			SI220	D6-221		GP2K-220	19C13	RF Coupling
C6	220			SI220	D6-221		GP2K-220	19C13	RF Coupling
C7	30	500			TCZ-30		NPOL-30	MS-43	Fixed Trimmer
C8	25			SI25NPO	TCZ-24		NPOL-25	29C18	Fixed Trimmer
C9	500			BPD-00047	DD-471		GP2K-680	19C32	AGC Filter
C10	500			BPD-00047	DD-471		GP2K-680	19C32	AGC Filter
C11	220			SI220	D6-221		GP2K-220	19C13	RF Amp. Fil.
C12	220			SI220	D6-221		GP2K-220	19C13	RF Amp. Fil.
C13	220			SI220	D6-221		GP2K-220	19C13	RF Amp. Plate Dec.
C14	1				TCZ-1				RF Coupling
C15	33			SI22NPO	TCZ-22		NPOK-22	29C12	RF Coupling
C16	5000			BPD-005	DD-502		811-005	29C1	Mixer Decoupling
C17	220			SI220	D6-221		GP2K-220	19C13	Mixer Filament
C18	220			SI220	D6-221		GP2K-220	19C13	Mixer Filament
C19	68				TCZ-, 68				Osc. Coupling
C20	220			SI220	D6-221		GP2K-220	19C13	RF Bypass
C21	4.7			SI5N750			N750K-4.7		Osc. Feedback
C22	4.7			SI5N750			N750K-4.7		Osc. Feedback
C23	360			SI360	D6-391		GP2K-360	19C14	RF Bypass
C24	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C25	220			SI220	D6-221		GP2K-220	19C13	Switch Strut Bypass
C26	220			SI220	D6-221		GP2K-220	19C13	Switch Strut Bypass
C27	220			SI220	D6-221		GP2K-220	19C13	Osc. Filament
C28	220			SI220	D6-221		GP2K-220	19C13	Osc. Filament
C29	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C30 A	1000		TCC2-2	BPD-2X001	DD-2-102	1W5D1	812-2X001	29C7	1st V. IF Dec.
B	1000					1W5D1			1st V. IF Fil.
C31	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C32A	1000		TCC2-2	BPD-2X001	DD-2-102	1W5D1	812-2X001	29C7	2nd V. IF Dec.
B	1000					1W5D1			2nd V. IF Fil.
C33A	1000		TCC2-2	BPD-2X001	DD-2-102	1W5D1	812-2X001	29C7	3rd V. IF Dec.
B	1000					1W5D1			3rd V. IF Fil.
C34	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Cathode
C35	.1	200	TCP104-1	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C36	5	500	TCM050-7	1469-000005	TCZ-4.7	5R5V5	GP1K-5	MS-55	V. Det. Filter
C37	1	200	TCP104-1	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C38	220		TCM221-7	SI220	D6-221	5W5T2	GP2K-220	19C13 †	V. Amp. Cathode
C39	1	400	TCP104-1	P288-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C40	5	500	TCM050-7	1468-000005	TCZ-4.7	5R5V5	GP1K-5	MS-55	S. IF Coupling
C41	50		TCM047-23	SI50	D6-500	5R5Q5	GP1K-50	19C28	Fixed Trimmer
C42	.05	200	TCP503-1	P288-05	DF-503	PTE4S5		2TM-S5	RF Bypass †
C43	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Amp. Cath.
C44A	4000		TCP502-SP	BPD-2X004	DD-2-502	(1D5D4	822-2X004	36C2	Det. AF Amp. Screen
B	4000		TCP502-SP			(1D5D4			Det. AF Amp. Cath.
C45	.1	400	TCPM104-4	P488-1	DF-104	PTE4P1		4TM-P1	Det. AF Amp. Dec.
C46	1000		TCC102-SP	BPD-001	DD-102	1W5D1	801-001	19C1	De-emphasis
C47	.002	600	TCP202-10	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Audio Coupling
C48	.005	600	TCP502-10	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C49	470		TCC471-SP	SI470	D6-471	5W5T5	GP2K-470	19C15	Sync. Coupling
C50	.01	400	TCP103-4	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Sync. Coupling
C51	.05	200	TCP503-1	P288-05	DF-503	PTE4S5		2TM-S5	Sync. Amp. Cath.
C52A	470		TCC683-D	SI470	D6-471	5W5T5	GP2K-470	19C15	Integrator Net
B	2000			BPD-002	DD-202	PTE6D2	801-002	29C2	Integrator Net
C	470			SI470	D6-471	5W5T5	GP2K-470	19C15	Integrator Net
C53	.01	400	TCPM103-4	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. MV Grid
C54	.0022	600	TCP202-13	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Vert. MV Feedback
C55	.05	400	TCP503-4	P488-05		PTE4S5		4TM-S5	Vert. Discharge
C56	.1	600	TCPM104-4	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C57	.1	200	TCP104-1	P288-1	DF-104	PTE4P1		2TM-P1	Fixed Trimmer *
C58	100	500	TCM101-7	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Vert. Sweep Coupling
C59	220	500	TCM221-7	SI220	D6-221	5W5T2	GP2K-220	1FM-32	Pic. Tube Grid ¶

CAPACITORS (CONT.)

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	33	500	TCSM330-9	SI33	D6-330	5W5Q3	GP1K-33	29C13	Hor. Sync. Coupling
C61	100	500	TCSM101-9	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Voltage Divider
C62	5	500	TCM050-7	1468-000005	TCZ-4.7	5W5V5	GP1K-5	MS-55	Horiz. Feedback
C63	.002	1000	TCPM202-10	P1068-002		PTE6D2		MB-D2	Hor. Sync. Coupling
C64	.02	200	TCP203-1	P488-02	DF-203	PTE4S2		2TM-S2	AFC Filter
C65	.25	200	TCP254-1	P488-25		GT2P25		2TM-P25	AFC Filter
C66	.05	400	TCP503-4	P488-05	DF-503	PTE4S5		4TM-S5	Hor. AFC Plate
C67	180	1000	TCM181-8						Hor. Osc. Grid
C68	.01	400	TCPM103-4	P488-01	D6-103	PTE4S1		4TM-S1	Fixed Trimmer
C69	.0015	600	TCPM105-11	P688-0015	D6-152	1W5D15	GP2L-0015	6TM-D15	Hor. Discharge
C70	470		TCC471-SP	SI470	D6-471	5W5T5	GP2K-470	19C15	Hor. Sweep Coupling
C71	.05	200	TCP503-1	P288-05	DF-503	PTE4S5		2TM-S5	Hor. Output Screen
C72	.1	400	TCPM104-4	P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C73	.25	400	TCP254-4	P488-25		GT4P25		4TM-P25	Damper Filter
C74	15	3000	TCM200-7						Hor. Sweep Coupling #
C75	.01	600	TCPM103-4	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C88	470		TCC471-SP	SI470	D6-471	5W5T5	GP2K-470	19C15	Diode Load Cap *
C77	.005	600	TCP502-10	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling *
C78	.001	600	TCC102-SP	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	AF Amp. Grid *
C79	220		TCM221-7	SI220	D6-221	5W5T2	GP2K-220	19C13	Output Grid *
C80	56			SI56	D6-560	5W5Q6	GP1K-56	19C28	Hor. Output Grid *
C81	.0015	600	TCPM105-11	P688-0015	D6-152	1W5D15	GP2L-0015	6TM-D15	Fixed Trimmer

* Used Only In Chassis Tap - 2.
† Some Chassis Tap -2 Use 80MFD, 150 Volt In This Application.
‡ Chassis Tap -2 Uses .005MFD In This Application.
§ Used Only In Chassis Tap And Tap-1.
● Used Only In Chassis Tap-1 And Tap-2.
¶ Some Chassis Tap-2 Use 100MMF In This Application.
# Some Chassis Use 20MMF In This Application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	TVC528-D	Concentrikit	RTV-232		Contrast Control - Front
B	500KΩ	½		B17-110 †			Volume Control And SW - Rear
C	Shaft End			B13-133 †			Attach Per Instructions In "Concentrikit"
D	Switch			E-187 †			Attach Per Instructions In "Concentrikit"
R2A	50KΩ	½	TVC543-D	Q11-123	AG-44-8	B-31	Horizontal Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R2A Per Instructions
R3A	750KΩ	½	TVC544-D	Q11-137	AG-61-8	B-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A Per Instructions
R4A	1Meg	½	TVC546-D	Q11-137	AG-61-8	B-69	Brightness Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R4A Per Instructions
R5A	5000Ω	½	TVC546-D	Q11-114	AM-19-8	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R5A Per Instructions
R6A	1Meg	½	TVC545-D	Q11-137	AG-61-8	B-69	Height Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R6A Per Instructions
R7	500Ω	1	TVC531-D				Buzz Control - Wire Wound - See Note 1

Note 1. Not Used In All Models.
† Additional Parts To Be Used In "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE STATED
R8	270K	½		BTS-270K	Antenna Loading - See Note 3
R9	270K	½		BTS-270K	Antenna Loading - See Note 3
R10	1.8Meg	½			RF Amp. Grid
R11	10000Ω	20% ½		BTA-1000	RF Amp. Plate
R12	5.1Ω	½			Parasitic Suppressor
R13	4700Ω	5% ½		BTS-470K-5%	Mixer Grid Coil Shunt
R14	120KΩ	20% ½			Mixer Grid - See Note 4
R15	1000Ω	½		BTS-1000	Mixer Decoupling
R16	27KΩ	20% ½		BTS-27K	Osc. Grid
R17	27KΩ	20% ½		BTS-27K	Osc. Grid
R18	47Ω	20% ½			Osc. Cathode
R19	1000Ω	½		BTS-1000	Osc. Plate
R20	330Ω	20% ½	TRC-331-1	BTS-330	AGC Network -See Note 2
R21	4700Ω	½	TRC-472-2	BTS-4700	1st Video IF Amp. Grid
R22	47Ω	½	TRC-470-2		1st Video IF Amp. Cathode
R23	330KΩ	20% ½	TRC-334-1	BTS-330K	1st Video IF Amp. Decoupling -See Note 2
R24	10KΩ	½	TRC-103-2	BTS-10K	2nd Video IF Transformer Shunt
R25	47Ω	½	TRC-470-2		2nd Video IF Amp. Cathode
R26	15KΩ	½	TRC-153-2		3rd Video IF Transformer Shunt
R27	150Ω	½	TRC-151-2	BTS-150	3rd Video IF Amp. Cathode
R28	330Ω	20% ½	TRC-331-1	BTS-330	Decoupling - See Note 5 &2
R29	120KΩ	20% ½	TRC-124-1	BTS-120K	Series Test Point - See Note 4
R30	5600Ω	½	TRC-562-2	BTS-5600	Video Det. Diode Load
R31	1Meg	20% ½	TRC-105-1	BTS-1Meg	AGC Network - See Note 6
R32	330Ω	20% ½	TRC-331-1	BTS-330	AGC Network -See Note 2
R33	1Meg	20% ½	TRC-105-4	BTA-1Meg	Video Amp. Grid - See Note 6
R34	22KΩ	20% ½	TRC-223-1	BTS-22K	Video Amp. Cathode - See Note 7
R35	6800Ω	½	TRC-682-5	BTA-6800	Video Amp. Plate
R36	1Meg	½	TRC-105-2	BTS-1Meg	Voltage Divider - See Note 8
R37	6800Ω	2	TRC-682-7	BTB-6800	Voltage Divider - See Note 2
R38	1.8Meg	½	TRC-185-2	BTS-1.8Meg	Voltage Divider - See Note 2
R39	100KΩ	20% ½	TRC-104-1	BTS-100K	Voltage Divider - See Note 9
R40	82Ω	½	TRC-820-2	BTS-82	Sound IF Amp. Cathode - See Note 2 and 10
R41	10000Ω	½	TRC-102-2	BTS-1000	Sound IF Amp. Decoupling - See Note 2
R42	15KΩ	½	TRC-153-2	BTS-15K	Ratio Det. Diode Load - See Note 2
R43	15KΩ	½	TRC-153-2	BTS-15K	Ratio Det. Diode Load - See Note 2
R44	220Ω	½	TRC-221-2	BTS-220	Balancing - See Note 2
R45	220Ω	½	TRC-221-2	BTS-220	Balancing - See Note 2
R46	330Ω	½	TRC-331-2	BTS-330	Balancing - See Note 2
R47	15KΩ	½	TRC-153-2	BTS-15K	De-emphasis - See Note 2 and 9
R48	560KΩ	½	TRC-564-2	BTS-560K	AF Amp. Grid - See Note 2
R49	22000Ω	½	TRC-222-2	BTS-2200	AF Amp. Cathode - See Note 2
R50	180KΩ	½	TRC-184-2	BTS-180K	AF Amp. Plate - See Note 11
R51	47KΩ	½	TRC-473-2	BTS-47K	AF Amp. Plate Decoupling - See Note 2
R52	2200Ω	½	TRC-222-2	BTS-2200	AF Amp. ACC Anode Load - See Note 2
R53	180Ω	½	TRC-181-2	BTS-180	Output Grid - See Note 12
R54	150Ω	½	TRC-151-2	BTS-150	Output Decoupling
R55	10KΩ	20% ½	TRC-103-1	BTS-10K	Isolation
R56	470KΩ	20% ½	TRC-474-1	BTS-470K	Isolation
R57	2.2Meg	½	TRC-225-2	BTS-2.2Meg	Sync. Sep. Grid

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	IRC PART No.	IDENTIFICATION CODES
R58	220KΩ	20% ½	TRC-224-1	BTS-220K	Sync. Sep. Plate
R59	3300Ω	½	TRC-332-2	BTS-3300	Sync. Amp. Cathode
R60	8200Ω	20% ½	TRC-822-1	BTS-8200	Sync. Amp. Plate
R61	56KΩ	½	TRC-563-2	BTS-56K	Integrator - See Note 11
R62	47KΩ	½	TRC-473-2	BTS-47K	Integrator
R63	47KΩ	½	TRC-473-2	BTS-47K	Integrator
R64	560KΩ	½	TRC-564-2	BTS-560K	Vert. MV Grid
R65	560KΩ	½	TRC-564-2	BTS-560K	Vert. MV Plate
R66	10KΩ	½	TRC-103-2	BTS-10K	Vert. Peaking
R67	2.7Meg	20% ½	TRC-275-1	BTS-2.7Meg	Vert. Output Grid - See Note 6
R68	560Ω	½	TRC-564-2	BTS-560	Vert. Output Cathode
R69	100KΩ	20% ½	TRC-104-1	BTS-100K	Vert. Feedback - See Note 13
R70	1.2Meg	½	TRC-125-2	BTS-1.2Meg	Picture Tube Grid - See Note 14
R71	2.7Meg	½	TRC-275-2	BTS-2.7Meg	Voltage Divider
R72	820KΩ	20% ½	TRC-824-1	BTS-820K	Horiz. AFC Grid
R73	150KΩ	20% ½	TRC-154-1	BTS-150K	Horiz. AFC Cathode
R74	68KΩ	½	TRC-683-2	BTS-68K	Horiz. AFC Cathode
R75	47KΩ	20% ½	TRC-473-1	BTS-47K	Horiz. AFC Plate - See Note 2
R76	8200Ω	20% ½	TRC-822-1	BTS-8200	Horiz. AFC Filter
R77	100KΩ	½	TRC-104-2	BTS-100K	Voltage Divider - See Note 2
R78	150KΩ	20% ½	TRC-154-1	BTS-150K	Horiz. Osc. Grid
R79	22KΩ	20% ½	TRC-223-1	BTS-22K	Horiz. Osc. Plate
R80	8200Ω	½	TRC-822-2	BTS-8200	Horiz. Osc. Transformer Shunt
R81	22KΩ	20% ½	TRC-223-1	BTS-22K	Horiz. Osc. Transformer Shunt
R82	330KΩ	½	TRC-334-2	BTS-330K	Horiz. Feedback
R83	1Meg	20% ½	TRC-105-1	BTS-1Meg	Horiz. Output Grid
R84	6800Ω	2	TRW-682-8	BW-2-6800	Horiz. Output Screen - Wire Wound
R85	560KΩ	½	TRC-564-2	BTS-560K	Horiz. Feedback
R86	150KΩ	20% 2	TRC-154-7	BTB-150K	Voltage Divider - See Note 2
R87	27KΩ	20% ½	TRC-273-1	BTS-27K	Voltage Divider - See Note 2
R88	3.3Ω	½	TRC-33A-1		HV Rectifier Filament - See Note 2
R89	31Ω	3	TRW-310-11		Filament String - Wire Wound - See Note 2 and 15
R90	18Ω	3	TRP-27		Filament String - Wire Wound - See Notes 2 and 16
R91	100Ω	10		1 3/4A-100	Filament String - Wire Wound - See Note 2
R92	86Ω	10			Filament String - Wire Wound - See Note 2
R93	220Ω	5	TRP-29	1 3/4A-225	Filter - Wire Wound
R94A	73Ω	10	TRP-20		Filament String - Wire Wound - See Note 2
B	58Ω	10			Filament String - Wire Wound - See Note 2
R95	4.7Ω	5	TRP-28	1 3/4A-5	Rectifier Ballast - Wire Wound
R96	18Ω	3	TRP-27		Filament String - Wire Wound - See Note 2
R97	18Ω	3	TRP-27		Filament String - Wire Wound - See Note 2
R98	10KΩ	20% ½	TRC-103-1		2nd Sound IF Transformer Shunt
R99	1000Ω	20% ½	TRC-102-1	BTS-1000	Decoupling - See Note 2

Note 2. Not Used In All Models.
Note 3. Some Models Use 470KΩ Resistor In This Application.
Note 4. Some Models Use 100KΩ Resistor In This Application.
Note 5. Some Models Use 560Ω Resistor In This Application.
Note 6. Some Models Use 1.5Meg Resistor In This Application.
Note 7. Some Models Use 220Ω Resistor In This Application.
Note 8. Some Models Use 6800Ω 2 Watt Resistor In This Application.
Note 9. Some Models Use 47KΩ Resistor In This Application.
Note10. Some Models Use 100Ω Resistor In This Application.
Note 11. Some Models Use 120KΩ Resistor In This Application.
Note 12. Some Models Use 150Ω Resistor In This Application.
Note 13. Some Models Use 220KΩ Resistor In This Application.
Note 14. Some Models Use 27KΩ Resistor In This Application.
Note 15. Some Models Use 1ΩΩ Resistor In This Application.
Note 16. Some Models Use 3Ω Resistor In This Application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	6.3V			TTR222-D	P-6134	P-3074	F0615
	Ⓖ .075A	Ⓖ 1.2A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	370Ω	18Ω	TTR209-D		HV0-6		Horiz. Output Trans.
	Tap 30Ω	Taps 9 and 13.4Ω SEC. 2 0Ω					
T3	650Ω	8.5Ω	TTR203-D	A-8112	A-3036	T80-5 ④	Vert. Output Trans.
T4A	96Ω		TTR234-D				Horiz. Deflection Coil
B	76Ω		TTR224-D				Vert. Deflection Coil

④ New mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T5	2.7KΩ	4Ω	205Ω	1.1Ω	TTR195-2D	A-3332 ④	A2928	R0-2	④ Drill new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: TELE-TONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM	4Ω	TSP466-D ①	5J4	5A15	① Used in Models TV324, TV336, TV340, TV345
B	PM	4Ω	TSP86-D ②	6J4	6A15	② Used in Model TV335
C	PM	4Ω	TSP465-D ③	10J12	10A4A	③ Used in Models TV325, TV326, TV328, TV329
	CONE DIA.	V. C. DIA.				
SP2A	4 13/16"	9/16"				
B	5 3/4"	9/16"				
C	9 3/8"	1"				

TELE-TONE MODELS 324, 325, 326, 328, 329, 335, 336, 340, 345

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ω)	TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.225A	31Ω	1 Henry	TTR226-D	C2326 ④	C-2974	TR3300 ④	④ New mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	IRC PART No.	
L2	Antenna Coil	0Ω					
L3	Trap Coil	0Ω					
L4	Trap Coil	.2Ω					
L5	RF Coil	0Ω		TLF-143-D			Channel 6
L6	RF Coil	0Ω					Channel 5
L7	RF Coil	0Ω					Channel 4
L8	RF Coil	0Ω					Channel 3
L9	RF Coil	0Ω					Channel 2
L10	Mixer Grid Coil	0Ω					2 Turns of C15 Lead
L11	Mixer Grid Coil	0Ω		TLF-143-D			Channel 6
L12	Mixer Grid Coil	0Ω					Channel 5
L13	Mixer Grid Coil	0Ω					Channel 4
L14	Mixer Grid Coil	0Ω					Channel 3
L15	Mixer Grid Coil	0Ω					Channel 2
L16	Osc. Coil	0Ω					Channel 13
L17	Osc. Coil	0Ω					Channel 11 - 12
L18	Osc. Coil.	0Ω					Channel 9 -10
L19	Osc. Coil	0Ω					Channel 7 - 8
L20	Osc. Coil	0Ω					Channel 5 - 6
L21	Osc. Coil	0Ω					Used With L20 For Channel 5
L22	Osc. Coil	0Ω					Channel 3 - 4
L23	Osc. Coil	0Ω					Used With L22 For Channel 3
L24	Osc. Coil	0Ω					Used With L22 For Channel 3
L25	Osc. Coil	0Ω					Channel 2
L26	1st Video IF	.2Ω	.4Ω				
L27	RF Choke	3Ω		TLF-140-D		CLA	3.3 Microhenries - Some Models Use 1KΩ Resistor
L28	RF Choke						Some Models Use 330Ω Resistor
L29	2nd Video IF	.3Ω	.3Ω	TLF 574-D			
L30	RF Choke						Some Models Use 330Ω Resistor
L31	Fil. Choke	3Ω		TLF 140-D		CLA	3.3 Microhenries
L32	Fil. Choke	3Ω		TLF 140-D		CLA	3.3 Microhenries
L33	RF Choke						Some Models Use 330Ω Resistor
L34	3rd Video IF	.6Ω	.6Ω	TLF 575-D			
L35	RF Choke						Some Models Use 330Ω Resistor
L36	4th Video IF	.8Ω	.8Ω	TLF 576-D			
L37	Peaking	3.5Ω		TLF 535-D			Purple Dot
L38	Peaking	11Ω		TLF 592-D			Green Dot Wound on 33KΩ Resistor
L39	Peaking	14Ω		TLF 573-D			Yellow Dot
L40	1st Sound IF	2.2Ω		TLF 579-D			Red Dot
L41	2nd Sound IF	3.3Ω					Not Used In All Models
L42	Quadrature Coil	3.3Ω		TLF 557-D			Not Used In All Models
L43	Ratio Det. Trans.			TLF 552-D			Not Used In All Models
L44	Horiz. Osc. Coil	138Ω		TLF 580-D			Tap at 95Ω
L45	Horiz. Wave Forming Coil	34Ω		TLF 581-D			
L46	Width Coil	25Ω		TLF 553-D			

SELENIUM RECTIFIER

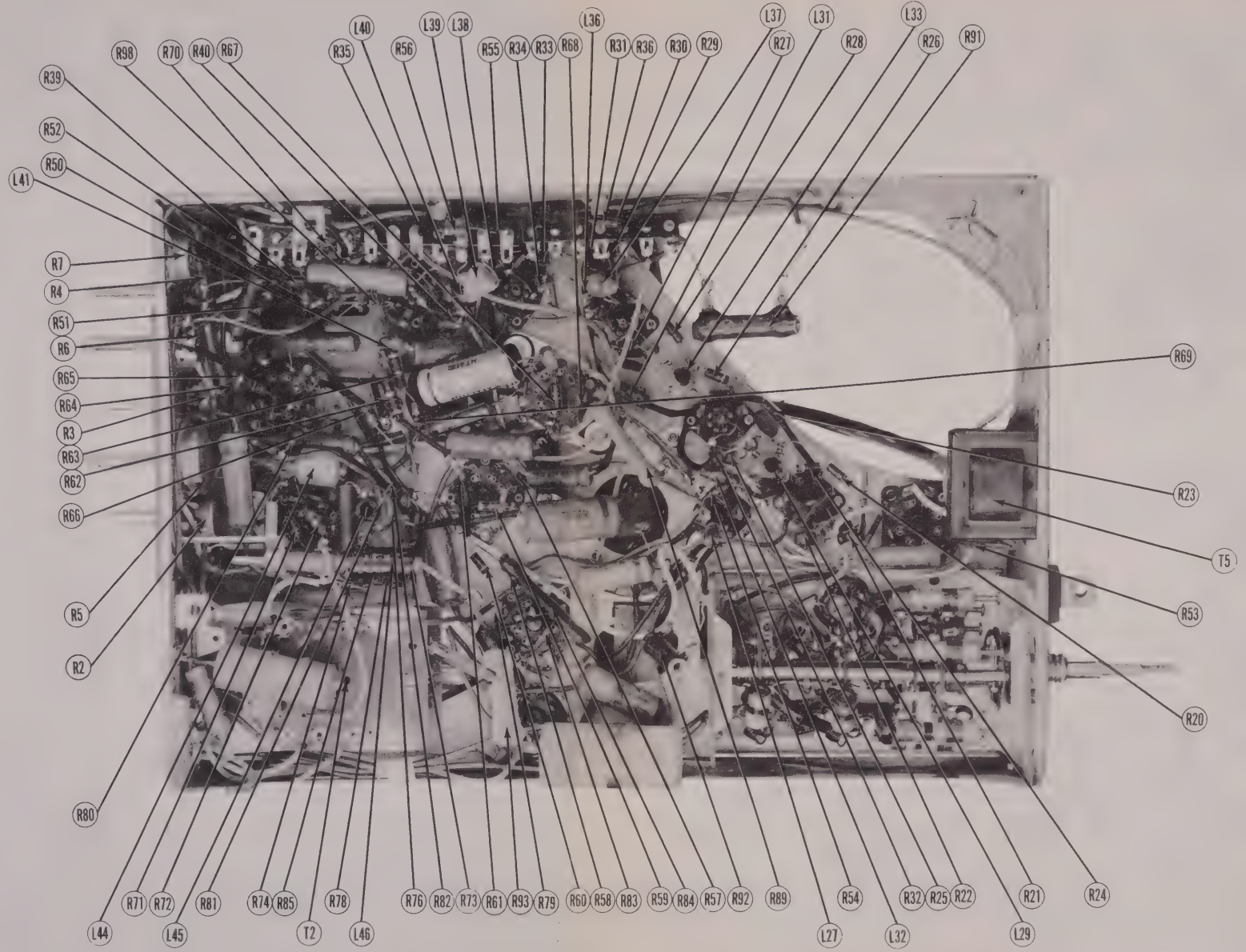
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	TELE-TONE PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.240A	TSR-106	NH-5	6Q4	
M2	.125A	TSR-107	ND-5	6P2	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			TELE-TONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M3	3AG	1/4A	TFU-1		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M4A	RF Tuner	TAS 551-D	3 - Tube
B	RF Tuner	TAS 540	1 - Tube (Alternate)
M5A	Crystal	1N-60	Video Detector
B	Crystal	1N-64	Video Detector (Alternate)
M6A	Crystal	1N-60	Blanking (Not Used In All Models)
B	Crystal	1N-64	Blanking Alternate (Not Used In All Models)
M7	Focus Magnet	TPM 103-D	
M8	Ion Trap	TLF 583-D	
	Safety Glass	TGL 169-D	Model TV-324
	Safety Glass	TGL 171-D	Models TV-325, TV-326
	Safety Glass	TGL 175-D	Models TV-328
	Safety Glass	TGL 176-D	Models TV-329
	Safety Glass	TGL 170-D	Models TV-336
	Safety Glass	TGL 172-D	Models TV-335, TV-340, TV-345
	Knob	TKN 262-D	Channel Selector (Used In Models With Individual Channel Selector Tuner)
	Knob	TKN 257-D	Fine Tuning
	Knob	TKN 261-D	Band Change (Used In Models With High-Low Band Change Tuner)
	Knob	TKN 264-D	Tuning (Used In Models With High-Low Change Tuner)
	Knob	TKN 260-D	Volume
	Knob	TKN 256-D	Contrast



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

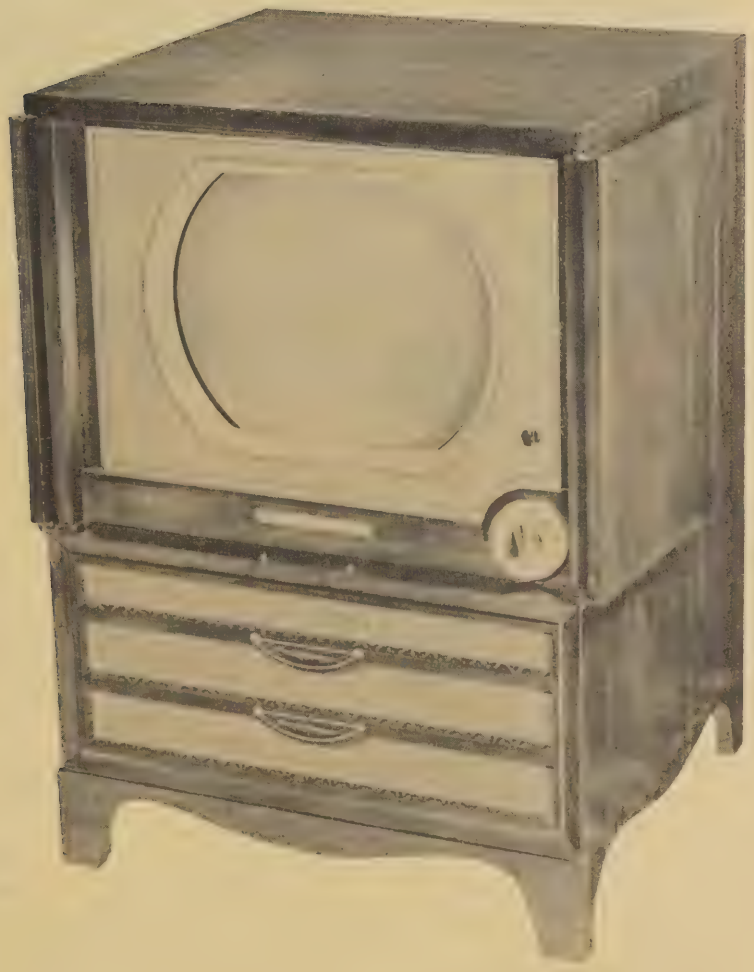
WESTINGHOUSE MODEL

H-643K16 (CH. V-2179, V-2179-1)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



WESTINGHOUSE MODEL
H-643K16 (CH. V-2179, V-2179-1)

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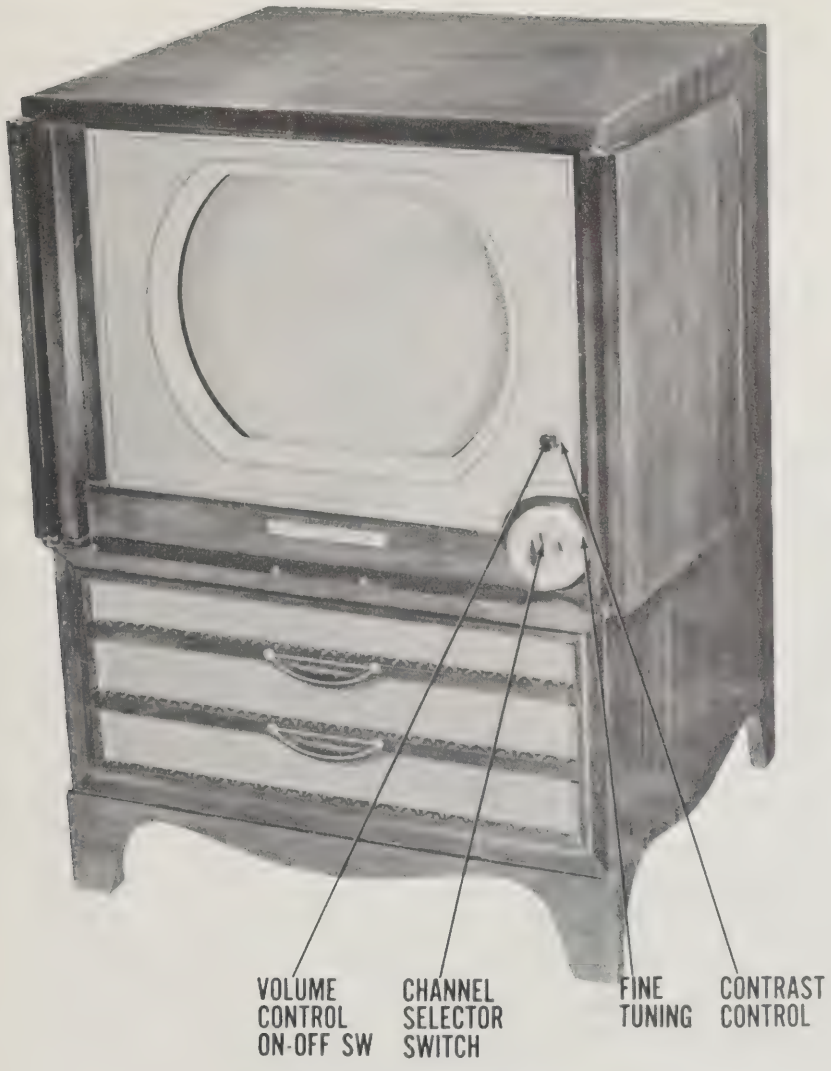
Date 3/51 Set No. 127—Folder No. 13



WESTINGHOUSE MODEL H-643K16

TRADE NAME	Westinghouse, Model H-643K16 (Ch. V-2179 Or V-2179-1)
MANUFACTURER	Westinghouse Elect. Corp., Home Radio Div., Sunbury, Pa.
TYPE SET	Television Receiver
TUBES	Twenty Four
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.82 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13

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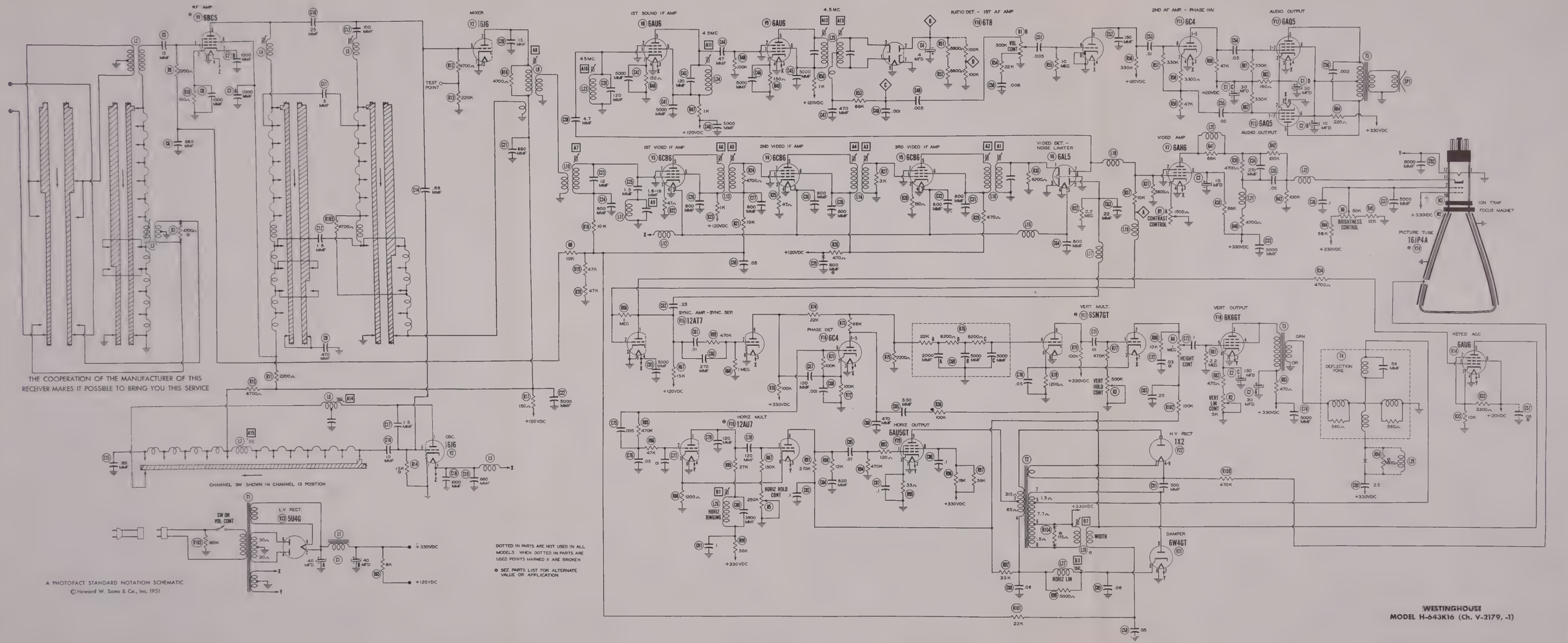
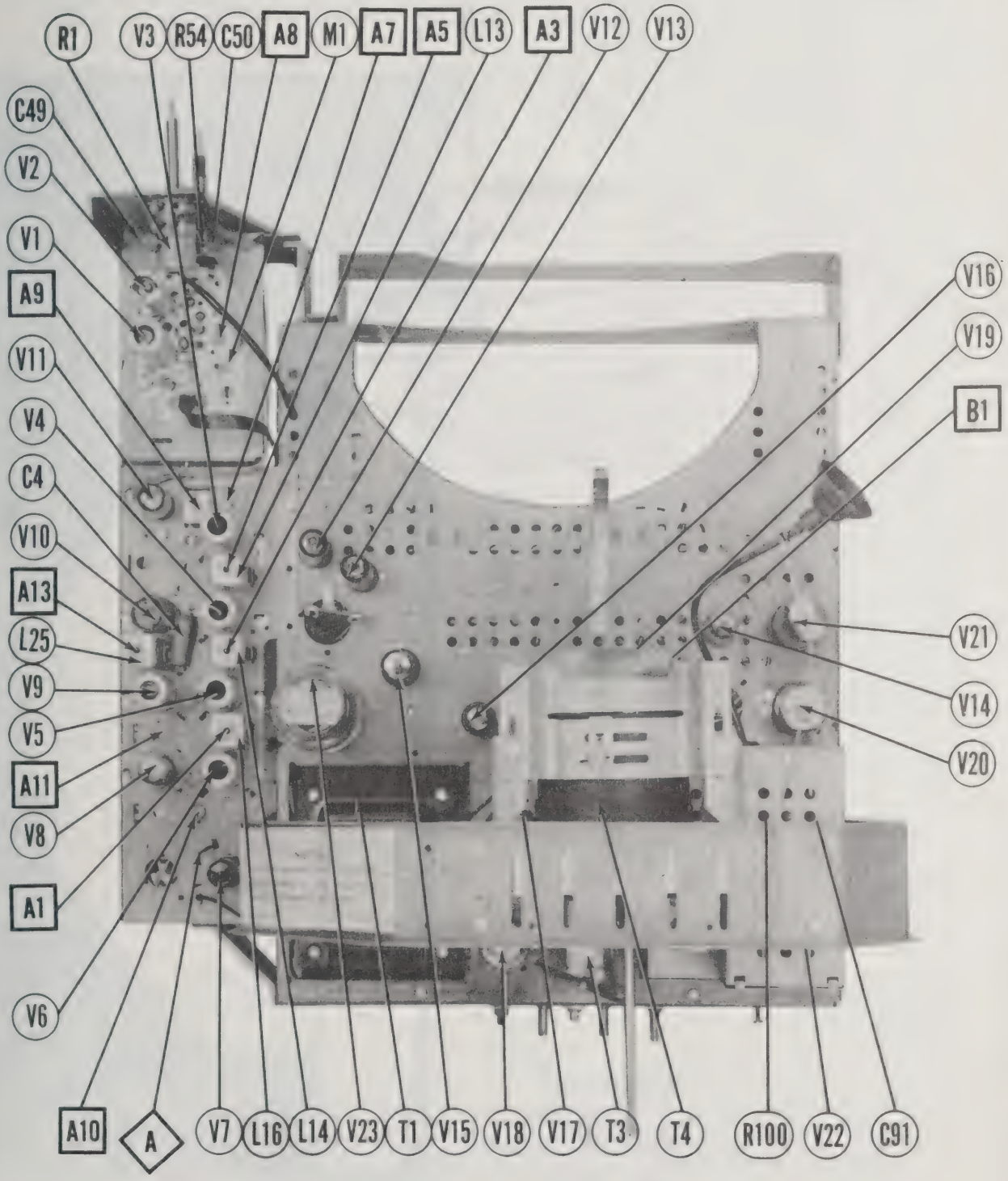
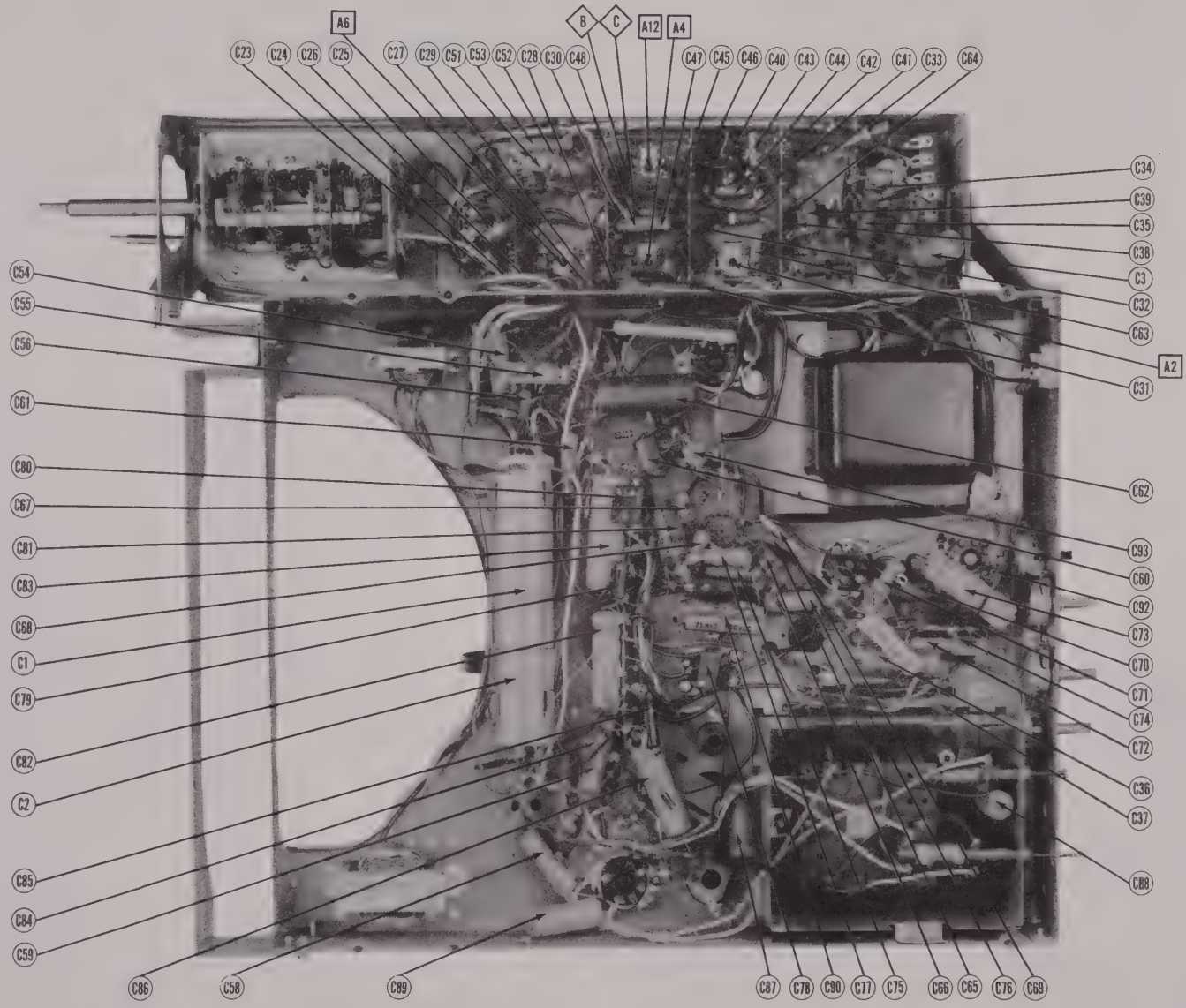
WESTINGHOUSE
MODEL H-643K16 (Ch. V-2179, -1)



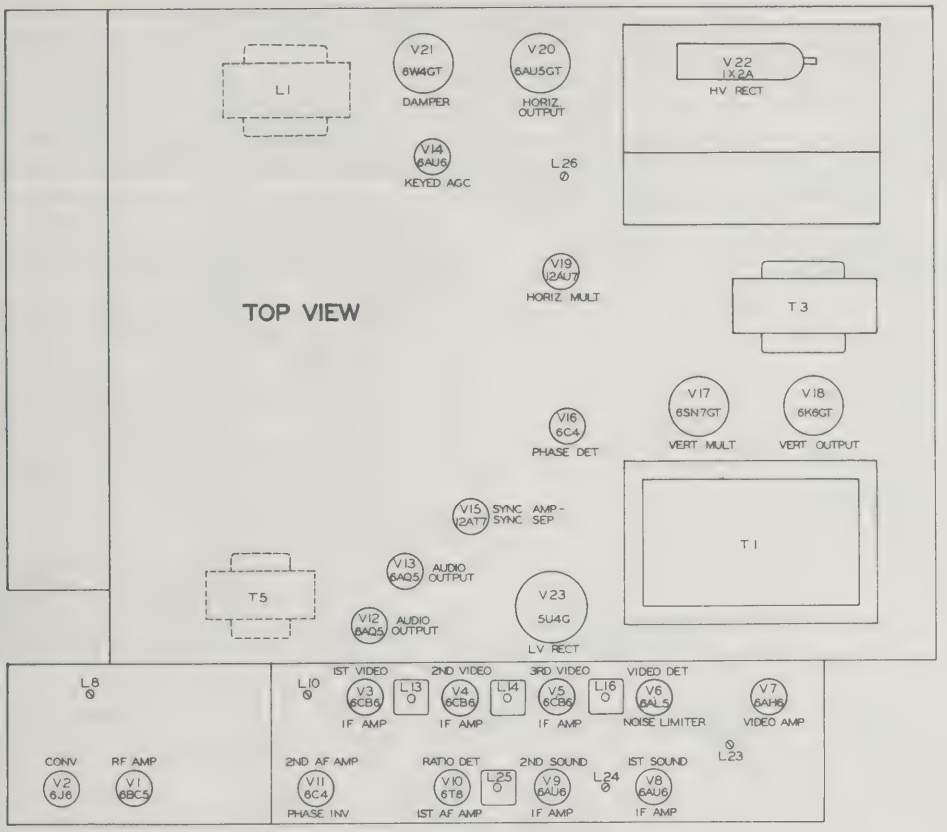
WESTINGHOUSE
MODEL H-643K16 (Ch. V-2179, -1)

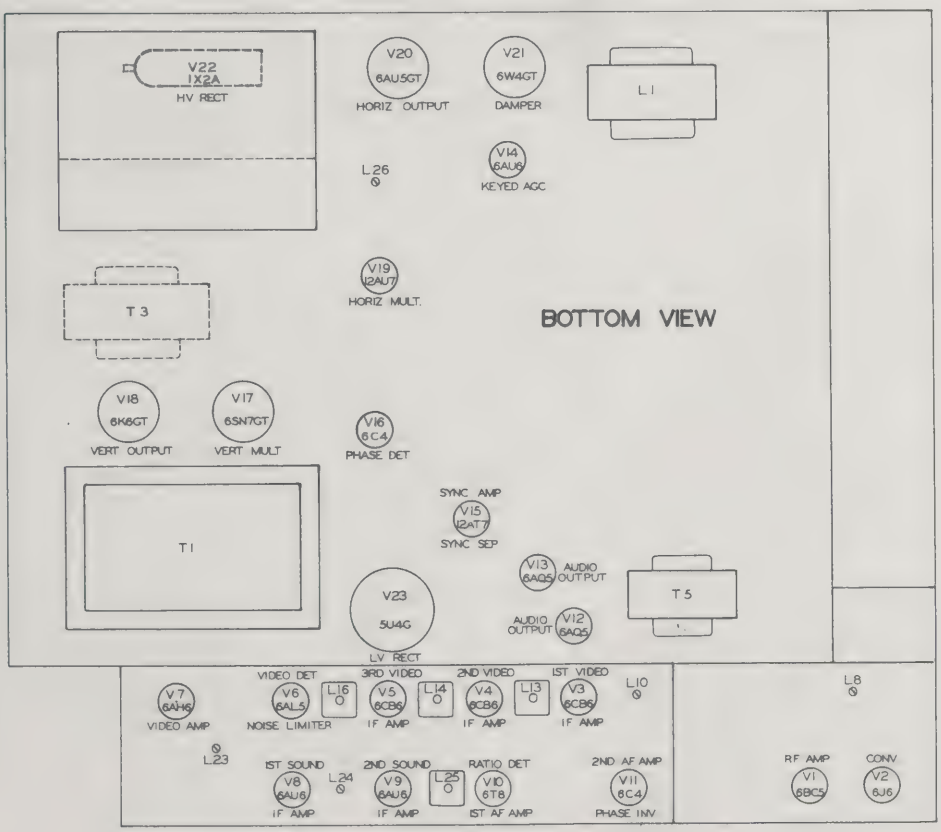


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed this will disable the local oscillator and eliminate the possibility of erroneous indications.
Connect a 10KΩ decoupling resistor in series with the oscilloscope vertical input lead and a .001MFD capacitor across the vertical input terminals.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
During steps 1 and 2 detune the plate circuit of the preceeding stage by clipping an alligator clip to pin 5 of the preceeding stage. The stray capacity thus added will sufficiently detune the circuit to prevent its absorbing power.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	44MC (10MC SWP)	42.25MC 44MC 45.75MC	Any	Vert. amp. thru 10KΩ to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to figure 1.
2.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	"	"	"	"	A3, A4	Adjust for response curve similar to figure 2.
3.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	"	"	"	"	A5, A6	Short link connecting L8 and L10. Adjust for response curve similar to figure 3.
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	"	"	"	"	A7, A8	Turn trimmer A9 to maximum clockwise. Adjust A7 and A8 for response curve similar to figure 4.
5.	"	"	"	41.25MC	"	"	A9	Adjust for MINIMUM marker indication at the 41.25MC point on response curve. Recheck overall response and retouch A7 and A8 if necessary.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (1± 1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown in schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.05MFD	High side to pin 1 (cath.) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A10, A 11, A12	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.05MFD	High side to pin 1 (cath.) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A10, A 11 A12	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per figure 5.
7.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A13	Reconnect capacitor C4. Adjust A13 so 4.5MC occurs at center of crossover lines as per figure 6. SLIGHTLY retouch A12 for max. amplitude and straightness of crossover lines.

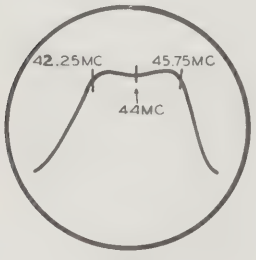


FIG.1

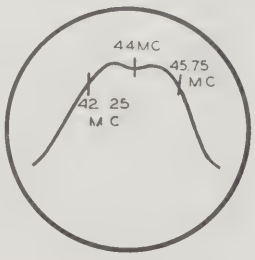


FIG.2

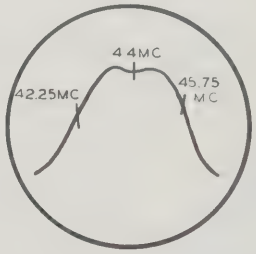


FIG.3

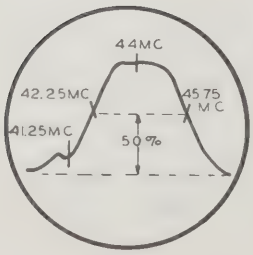


FIG.4

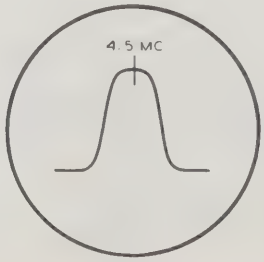


FIG. 5

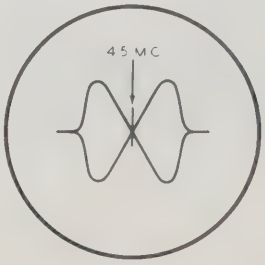


FIG. 6

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A) Low side to chassis.	A14	Adjust to place sound marker in "notch" as shown in figure 7.
9.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the sound marker can be properly placed well within the range of the fine tuning control. If not compromise adjustment of A14 may be required.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
10.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A15	Adjust to place sound marker in "notch" as shown in figure 7.
11.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the sound marker can be properly placed well within the range of the fine tuning control. If not, compromise adjustment of A15 may be required.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

THE RF MIXER PORTION OF THIS RECEIVER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

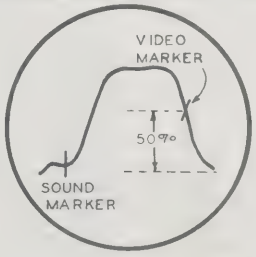


FIG. 7

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.2VDC	.6VDC	0V	6.3VAC	100VDC	100VDC	.6VDC		
V 2	6J6	65VDC	115VDC	0V	6.3VAC	-5.2VDC	§-7VDC	0V		
V 3	6CB6	-.2VDC	.6VDC	6.3VAC	0V	110VDC	110VDC	0V		
V 4	6CB6	-.2VDC	.6VDC	6.3VAC	0V	112VDC	112VDC	0V		
V 5	6CB6	0V	1.4VDC	6.3VAC	0V	110VDC	110VDC	0V		
V 6	6AL5	0V	-1VDC	6.3VAC	0V	0V	0V	-.5VDC		
V 7	6AH6	-.5VDC	0V	6.3VAC	0V	290VDC	270VDC	5.2VDC		
V 8	6AU6	0V	0V	6.3VAC	0V	112VDC	112VDC	1VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	112VDC	112VDC	1VDC		
V 10	6T8	-.4VDC	-1VDC	-.4VDC	6.3VAC	0V	0V	0V	-.5VDC	70VDC
V 11	6C4	85VDC	0V	6.3VAC	0V	85VDC	15VDC	40VDC		
V 12	6AQ5	#0V	#12VDC	0V	6.3VAC	#185VDC	#190VDC	#0V		
V 13	6AQ5	#0V	#12VDC	6.3VAC	0V	#185VDC	#190VDC	#0V		
V 14	6AU6	65VDC	90VDC	6.3VAC	0V	*	120VDC	90VDC		
V 15	12AT7	60VDC	-.2VDC	0V	6.3VAC	6.3VAC	55VDC	-.8VDC	0V	0V
V 16	6C4	1.6VDC	0V	0V	6.3VAC	1.6VDC	1.1VDC	2.2VDC		
V 17	6SN7GT	-25VDC -30VDC	180VDC	3.3VDC	2.8VDC	40VDC	3.3VDC	6.3VAC	0V 40VDC	
V 18	6K6GT	0V	6.3VAC	310VDC	310VDC	0V	0V	0V	20VDC	
V 19	12AU7	90VDC	.5VDC	5.2VDC	6.3VAC	6.3VAC	135VDC	-5.8VDC -7.6VDC	5.2VDC	0V
V 20	6AU5GT	-18VDC	6.3VAC	3.5VDC	0V	*	0V	0V	165VDC	
V 21	6W4GT	0V	0V	470VDC	0V	320VDC	0V	6.3VAC	0V	
V 22	1X2A	* DO NOT MEASURE								
V 23	5U4G	0V	330VDC	120VDC	320VAC	0V	320VAC	0V	330VDC	
V 24	16JP4A	0V	35VDC 160VDC	PIN 10 320VDC	PIN 11 140VDC	PIN 12 6.3VAC				

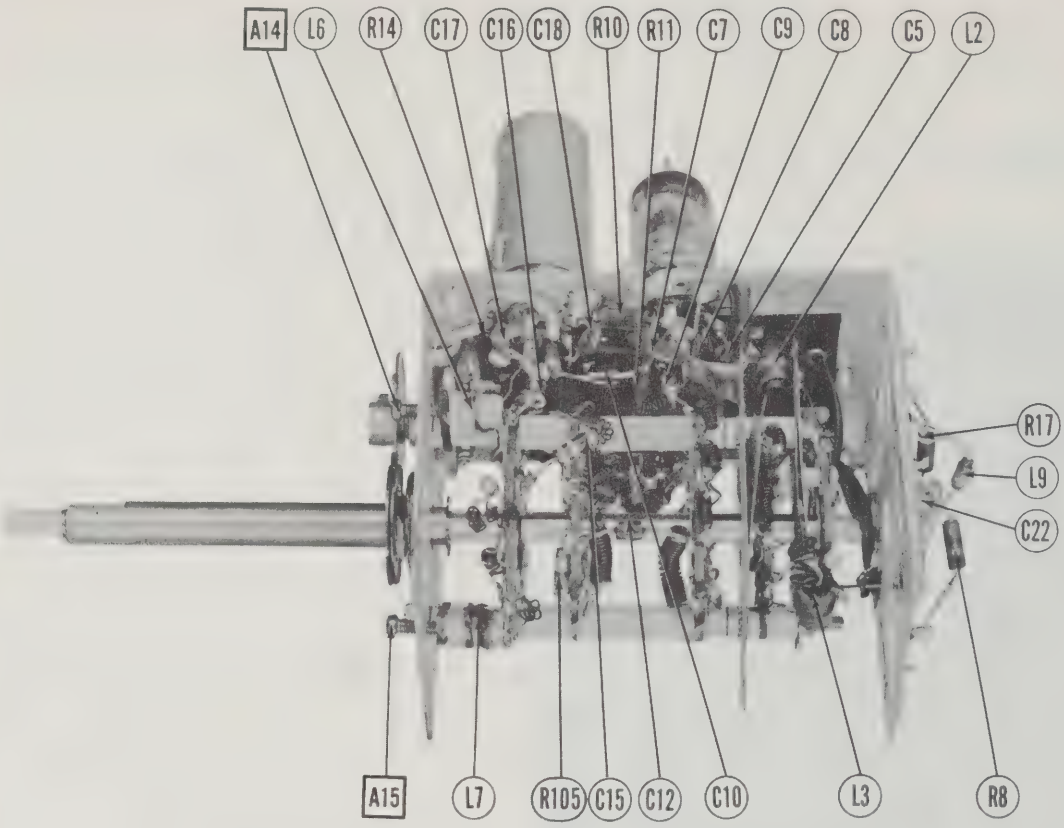
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM 120VDC POINT
* DO NOT MEASURE

RESISTANCE READINGS

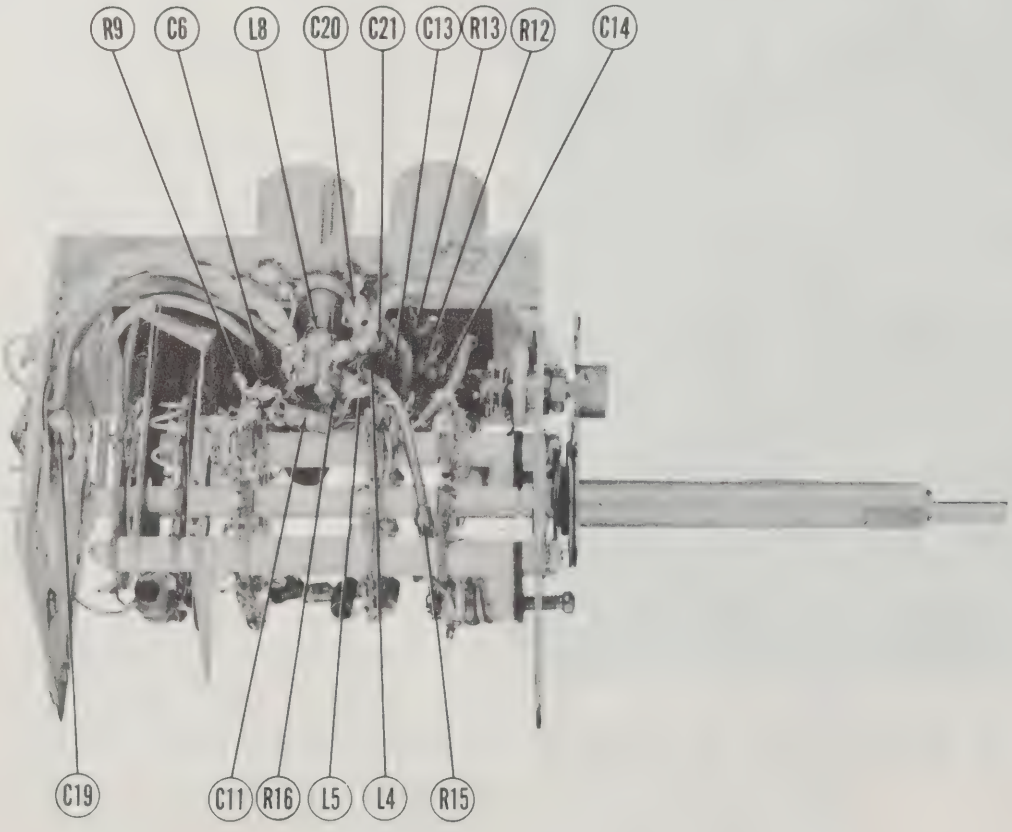
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	105KΩ	100Ω	0Ω	.1Ω	#2.3KΩ	#2.3KΩ	100Ω		
V 2	6J6	#4.8KΩ	#150Ω	0Ω	.1Ω	225KΩ	15KΩ	0Ω		
V 3	6CB6	105KΩ	47Ω	.1Ω	0Ω	#1KΩ	#1KΩ	0Ω		
V 4	6CB6	105KΩ	47Ω	.1Ω	0Ω	#470Ω	#470Ω	0Ω		
V 5	6CB6	.5Ω	150Ω	.1Ω	0Ω	#950Ω	#950Ω	0Ω		
V 6	6AL5	.5Ω	2.2Meg	.1Ω	0Ω	0Ω	0Ω	5.6KΩ		
V 7	6AH6	5.6KΩ	0Ω	.1Ω	0Ω	†9.4KΩ	†60KΩ	1.5KΩ		
V 8	6AU6	.8Ω	0Ω	.1Ω	0Ω	#1KΩ	#1KΩ	150Ω		
V 9	6AU6	100KΩ	0Ω	.1Ω	0Ω	#1KΩ	#1KΩ	150Ω		
V 10	6T8	Inf.	13KΩ	Inf.	.1Ω	0Ω	0Ω	0Ω	10Meg	#330KΩ
V 11	6C4	#47KΩ	47KΩ	.1Ω	0Ω	#47KΩ	380KΩ	50KΩ		
V 12	6AQ5	#330KΩ	#180Ω	0Ω	.1Ω	†475Ω	†255Ω	#330KΩ		
V 13	6AQ5	#330KΩ	#180Ω	.1Ω	0Ω	†475Ω	†255Ω	#330KΩ		
V 14	6AU6	#20KΩ	#3KΩ	.1Ω	0Ω	125KΩ	#0Ω	#3KΩ		
V 15	12AT7	#15KΩ	16KΩ	0Ω	.1Ω	.1Ω	†30KΩ	1Meg	0Ω	0Ω
V 16	6C4	†90KΩ	Inf.	0Ω	.1Ω	†90KΩ	200KΩ	100KΩ		
V 17	6SN7GT	470KΩ 1Meg	▲1.1Meg	1.2KΩ	40KΩ	†100KΩ	1.2KΩ	.1Ω	0Ω	
V 18	6K6GT	0Ω	.1Ω	†1.1KΩ	†1.1KΩ	2.2Meg	Inf.	0Ω	5.5KΩ 470Ω	
V 19	12AU7	†85KΩ	720KΩ	1.2KΩ	.1Ω	.1Ω	▲300KΩ	150KΩ 400KΩ	1.2KΩ	0Ω
V 20	6AU5GT	470KΩ	.1Ω	33Ω	Inf.	▲85Ω	Inf.	0Ω	†13KΩ	
V 21	6W4GT	Inf.	Inf.	Inf.	Inf.	†55Ω	Inf.	.1Ω	0Ω	
V 22	1X2A	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲400Ω
V 23	5U4G	0Ω	13KΩ	#0Ω	30Ω	Inf.	30Ω	Inf.	13KΩ	
V 24	16JP4A	0Ω	12KΩ 35KΩ	PIN 10 †36Ω	PIN 11 60KΩ	PIN 12 .1Ω				

MEASURED FROM 120VDC POINT
† MEASURED FROM PIN 2 OF V23
▲ MEASURED FROM PIN 3 OF V 21

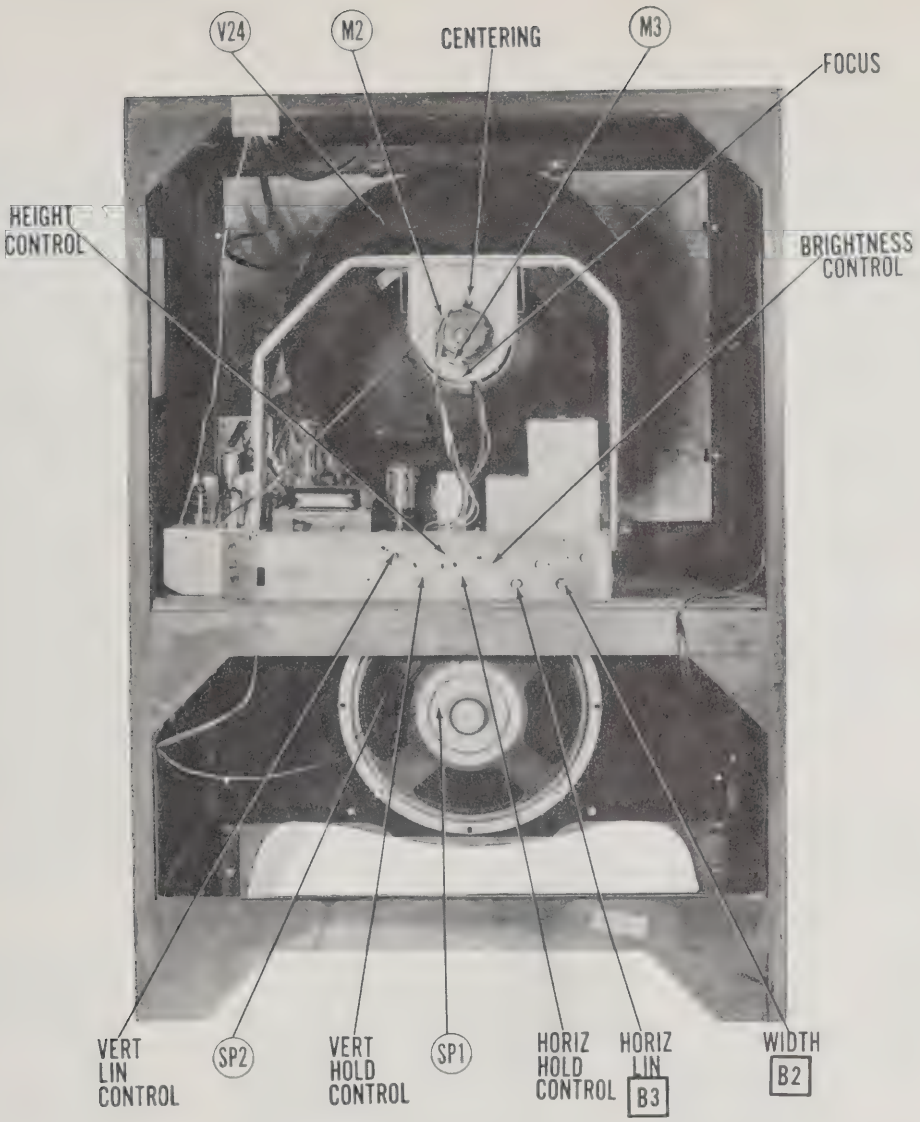
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station , preferably a test pattern.

Turn the horizontal hold to the mid-position of its range.

Adjust the "ringing " coil slug (B1) until the picture synchronizes horizontally.

On a weak signal the picture should drop out of sync at each extreme of the horizontal hold control.

Adjust the width slug (B2) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B3) until the picture symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove eight wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove four 5/16 hex head bolts from chassis. Remove chassis.
7. Remove four 5/16" hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE THE CHASSIS AS OTULINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Det.-Noise Limiter	6AL5	6AL5	6BT	
V7	Video Amplifier	6AH6	6AH6	7BK	
V8	1st Sound IF Amp.	6AU6	6AU6	7BK	
V9	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det. -1st AF Amplifier	6T8	6T8	9E	
V11	2nd AF Amp. -Phase Inverter	6C4	6C4	6BG	
V12	Audio Output	6AQ5	6AQ5	7BZ	
V13	Audio Output	6AQ5	6AQ5	7BZ	
V14	Keyed AGC	6AU6	6AU6	7BK	
V15	Sync. Amp. -Sync. Sep.	12AT7	12AT7	9A	
V16	Phase Det.	6C4	6C4	6BG	
V17A	Vert. Mult.	6SN7GT	6SN7GT	8BD	
B	Vert. Mult.	12BH7	12BH7	9A	
C	Vert. Mult.	12AU7	12AU7	9A	
V18	Vert. Output	6K6GT	6K6GT	7S	
V19A	Hor. Mult.	12AU7	12AU7	9A	
B	Hor. Mult	12BH7	12BH7	9A	
V20	Hor. Output	6AU5GT	6AU5GT	6CK	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1X2A	1X2A	7CB	
V23	LV Rectifier	5U4G	5U4G	5T	
V24A	Picture Tube	16JP4A	16JP4A	12D	
B	Picture Tube	16JP4	16JP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	V-9891	AF88J66H		UPT4445-3335		TVL-4720	▲ Filter ■ Filter ● Decoupling Output Cathode
B	40	450							
C	30	350							
D	30	350							
C2A	30	400	V-9892	AF62J30B		UPT3140V 15		TVL-3754 TVA-1310	▲ Vert. Output Dec. ■ Output Dec.
B	10	400							
C	150	50							▲ Vert. Output Cath.
C3	10	250	V-10117	PRS250/12		BR1025		TVA-1504	V. Amp. Screen
C4	4	50	V-4637	PRS150/4		BR550		TVA-1303	Stabilizing Cap
C5	15			SII5	D6-150		GP1K-15	19C22	RF Coupling
C6	680			BPD-0008	DD-801		801-001	19C17	AGC Filter
C7A	1000			BPD-2X001	DD-2-102		812-2X001	29C7	RF Amp. Dec.
B	1000								RF Amp. Cath.
C8	1000			BPD-001	DD-102		801-001	19C1	RF Amp. Cath.
C9	470			SI470	D6-471		GP2K-470	19C15	RF Amp. Dec.
C10	.25								RFCoupling
C11	.5				TCZ-.5				RF Coupling
C12	1.8								RF Coupling
C13	100			SI100	D6-101		GP1K-100	19C11	RF Coupling
C14	.68				TCZ-.68				Osc. Coupling
C15	.68				TCZ-.68				Fixed Trimmer
C16	10			SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Grid Cap.
C17	1.5			SII.5NPO	TCZ-1.5		NPOK-1.5		Osc. Feedback
C18	1000			BPD-001	DD-102		801-001	19C1	Osc. Fil.
C19	680			SI680	D6-681		GP2K-680	19C17	Filament Bypass
C20	15			SII5	D6-150		GP1K-15	19C22	Fixed Trimmer
C21	680			BPD-0008	DD-801		801-001	19C17	RF Bypass
C22	5000		V-5596	BPD-005	DD-502		811-005	29C1	RF Bypass
C23	12		R3CC20SL220K	SII2	TCZ-12		GP1K-12		Fixed Trimmer
C24	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	AGC Filter
C25	1.5		V-9926-1	SII.5NPO	TCZ-1.5		NPOK-1.5		IF Coupling
C26	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	1st V. IF Dec.
C27	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	AGC Filter
C28	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	2nd V. IF Dec.
C29	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	RF Bypass †
C30	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	2nd V. IF Fil.
C31	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	3rd V. IF Dec.
C32	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	3rd V. IF Fil.
C33	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C34	270	500	RCM20B271K	SI270	D6-271	5W5T25	GP2K-270	19C31	Video Coupling
C35	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C36	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Grid
C37	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	Pic. Tube Grid
C38	4.7		V-9926-3	SI4.7NPO	TCZ4.7	5R5V5	NPOK-4.7	M8-55	S. IF Coupling
C39	120	500	RCM20B121K	SII20	D6-121		GP2K-120	19C29	Fixed Trimmer
C40	5000		V-5596	BPD-005	DD-502	1D5D5	811-01	29C1	RF Bypass
C41	5000		V-5596	BPD-005	DD-502	1D5D5	811-01	29C1	1st S. IF Dec.
C42	5000		V-5596	BPD-005	DD-502	1D5D5	811-01	29C1	1st S. IF Cath.
C43	120	500	RCM20B121K	SII20	D6-121		GP2K-120	19C29	Fixed Trimmer
C44	47	500	RCM20B470K	1468-00005	D6-470	5W9Q5	GP1K-47	1FM-45	S. IF Coupling
C45	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Dec.
C46	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	2nd S. IF Cath.
C47	470		R5CC202Y471K	SI470	D6-471	5W5T5	GP2K-470	19C15	Diode Load Cap
C48	.001	200	RCP10W2102N	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	De-emphasis
C49	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C50	.006	400	RCP10W4602M	P688-006	D6-562	PTE6D6		6TM-D6	Tone Comp.
C51	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C52	150	500	RCM20B151M	1468-00015	D6-151	5W5T15	GP2K-150	1FM-315	AF Amp. Plate
C53	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C54	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C56	.002	400	RCP10W4202M	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Output Plate
C57	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass †
C58	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	AGC Filter
C59	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	AGC Filter
C60	270	500	RCM20B271K	SI270	D6-271	5W5T25	GP2K-270	19C31	Sync. Coupling
C61	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Sync. Coupling
C62	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	Sync. Coupling
C63	22	500	RCM20B220K	1468-00025	D6-220	5W5Q25	GP1K-22	M8-425	Noise Limiter Plate
C64	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	19C1	V. Det. -Limiter Fil.
C65	330	500	RCM20B331K	1468-00035	D6-331	5W5T3	GP2K-330	19C14	Hor. Feedback
C66	470	500	RCM20B471K	1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Phase Det. Plate
C67	120	500	RCM20B121K	SII20	D6-121	5W5T15	GP2K-120	19C29	Sync. Coupling
C68	.001	400	RCP10W4102M	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Phase Det. Cath.
C69A	2000		* V-9213	P688-002	*	PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000			P688-005		PTE6D5	811-005	6TM-D5	Integrator Net
C70	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Vert. MV Cath
C71	.01	400	RCP10W4103K	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. MV Feedback
C72	.03	400	RCP10W4303M	P688-03		PTE6S3		6TM-S3	Vert. Discharge †
C73	.1	600	V-6023-4104M	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C74	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	RF Bypass
C75	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	811-005	6TM-D5	AFC Filter
C76	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	AFC Filter
C77	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AFC Filter
C78	120	500	RCM20C121J	1469-00025	D6-121	5R5T15	GP2K-120	M8-315	Hor. MV Feedback
C79	120	500	RCM20C121J	1469-00015	D6-121	5R5T15	GP2K-120	M8-315	Hor. MV Plate
C80	3900	500	RCM30C392K	1464-004		1DR5D4		M8-24	Fixed Trimmer
C81	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		4TM-P1	Hor. MV Dec.
C82	.1	600	RCP10W6104M	P688-1	DF-104	PTE6P1		6TM-P1	Hor. MV Dec.
C83	.25	600	RCP10W4254M	684-25		GT6P25		6TM-P25	Decoupling
C84	820	500	RCM20C821K			1W5T8		M8-38	HV Filter
C85	.01	600	RCP10W6103M	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Hor. Discharge
C86	.1	600	RCP10W6104M	P688-1	DF-104	PTE6P1		6TM-P1	Hor. Sweep Coupling
C87	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		4TM-P1	Hor. Output Screen
C88	.06	600	RCP10M6603M	684-06		GT6S6		6TM-S6	Hor. Output Screen
C89	.06	600	RCP10M6603M	684-06		GT6S6		6TM-S6	Damper Filter
C90	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	Damper Filter
C91	500	20000	V-9901-1	HV20C	TV3-502				Hor. Sweep Coupling
C92	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	HV Filter
C93	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	29C1	Filament Bypass Sync. Amp. -Sep. Fil.

* Items C69A, C69B, C69C, R76A, R76B and R76C are combined into one unit.
† Some models use .05MFD in this application. Mfgrs. Part # RCP10W4503M.
‡ Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	V-9877			SBBT-565-S	Contrast Control - Panel
B	500KΩ	½					Volume Control And SW- Tapped @ 50KΩ Rear
R2A	5000Ω	½	V-6463	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R2A Per Instructions
R3A	500KΩ	½	V-9894-1	Q11-133	AG-58-S	AN-59	Vert. Hold Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R3A Per Instructions
R4A	1Meg	½	V-9813-2	Q11-137	AG-61-S	B-69	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	Not req.	Attach to R4A Per Instructions
R5A	250KΩ	½	V-9893-1	Q11-130	AG-55-S	AN-50	Horiz. Hold Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A Per Instructions
R6A	50KΩ	½	V-9916-1	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	4700Ω	½		BTS-4700	Antenna Coil Shunt - See Note 1
R8	10KΩ	20% ½	RC20AE103M	BTS-10K	AGC Network
R9	2200Ω	½		BTS-2200	RF Amp. Grid
R10	100Ω	20% ½		BTS-100	RF Amp. Cathode
R11	2200Ω	20% ½		BTS-2200	RF Amp. Decoup
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ	20% ½			Mixer Grid
R14	15KΩ	½			Osc. Grid - See Note 2
R15	4700Ω	½		BTS-4700	Osc. Plate
R16	4700Ω	½		BTS-4700	1st Video IF Transformer Shunt
R17	150Ω	½	RC20AE151K	BTS-150	Tuner Decoup
R18	10KΩ	20% ½	RC20AE103M	BTS-10K	AGC Network
R19	47KΩ	½	RC20AE473K	BTS-47K	AGC Network
R20	47KΩ	½	RC20AE473K	BTS-47K	AGC Network
R21	10KΩ	20% ½	RC20AE103M	BTS-10K	AGC Network
R22	47Ω	½	RC20AE470K		1st Video IF Amp. Cathode
R23	1000Ω	20% ½	RC20AE102M	BTS-1000	1st Video IF Amp. Decoup
R24	4700Ω	5% ½	RC20AE472K	BTS-4700-5%	2nd Video IF Transformer Shunt
R25	47Ω	½	RC20AE470K		2nd Video IF Amp. Cathode
R26	470Ω	½	RC20AE471K	BTS-470	Decoup
R27	3000Ω	5% ½	V-9927-5		3rd Video IF Transformer Shunt
R28	150Ω	½	RC20AE151K	BTS-150	3rd Video IF Amp. Cathode
R29	470Ω	½	RC20AE471K	BTS-470	3rd Video IF Amp. Decoup
R30	8200Ω	5% ½	V-9927-4		4th Video IF Transformer Shunt
R31	5600Ω	5% ½	V-9927-3		Video Det. Diode Load
R32	2.2Meg	20% ½	RC20AE225M	BTS-2.2Meg	Noise Limiter Load
R33	3300Ω	1	RC30AE332K	BTA-3300	Voltage Divider
R34	4700Ω	½	RC20AE472K	BTS-4700	Keyed AGC Grid
R35	10KΩ	2	RC40AE103K	BTS-10K	Keyed AGC Cathode
R36	100KΩ	½	RC20AE104K	BTS-100K	Isolation
R37	10KΩ	20% ½	RC20AE103M	BTS-10K	Isolation
R38	68KΩ	1	RC30AE683K	BTA-68K	Video Amp. Screen

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R39	4700Ω	1	RC30AE472K	BTA-4700	Video Amp. Plate
R40	4700Ω	1	RC30AE472K	BTA-4700	Video Amp. Plate
R41	68KΩ	½	RC20AE683K	BTS-68K	Video Peaking Coil Shunt
R42	100KΩ	½	RC20AE104K	BTS-100K	Isolation
R43	100KΩ	½	RC20AE104K	BTS-100K	Voltage Divider
R44	68KΩ	½	RC20AE683K	BTS-68K	Voltage Divider
R45	12KΩ	½	RC20AE123K	BTS-12K	Picture Tube Grid
R46	150Ω	½	RC20AE151K	BTS-150	1st Sound IF Amp. Cathode
R47	1000Ω	20% ½	RC20AE102M	BTS-1000	1st Sound IF Amp. Decoup
R48	100KΩ	20% ½	RC20AE104M		2nd Sound IF Amp. Grid
R49	150Ω	½	RC20AE151K	BTS-150	2nd Sound IF Amp. Cathode
R50	1000Ω	20% ½	RC20AE102M	BTS-1000	2nd Sound IF Amp. Decoup
R51	6800Ω	5% ½	RC20AE682J	BTS-6800-5%	Ratio Det. Diode Load
R52	6800Ω	5% ½	RC20AE682J	BTS-6800-5%	Ratio Det. Diode Load
R53	68KΩ	½	RC20AE683K	BTS-68K	De-emphasis
R54	22KΩ	20% ½	RC20AE223M	BTS-22K	Tone Compensation
R55	10Meg	20% ½	RC20AE105M	BTS-10Meg	AF Amp. Grid
R56	330KΩ	½	RC20AE334K	BTS-330K	AF Amp. Plate
R57	330KΩ	½	RC20AE334K	BTS-330K	Phase Inv. Grid
R58	3300Ω	½	RC20AE332K	BTS-3300	Phase Inv. Cathode
R59	47KΩ	½	RC20AE473K	BTS-47K	Phase Inv. Cathode
R60	47KΩ	½	RC20AE473K	BTS-47K	Phase Inv. Plate
R61	330KΩ	½	RC20AE334K	BTS-330K	Output Grid
R62	330KΩ	½	RC20AE334K	BTS-330K	Output Grid
R63	180Ω	1	RC30AE181K	BTA-180	Output Cathode
R64	220Ω	1	RC30AE221K	BTA-220	Output Decoup
R65	8000Ω	10	V-9900-8	1 3/4A-8000	Voltage Divider - Wire Wound
R66	1Meg	½	RC20AE105K	BTS-1Meg	Sync. Sep. Grid
R67	15KΩ	½	RC20AE153K	BTS-15K	Sync. Sep. Plate
R68	1Meg	½	RC20AE105K	BTS-1Meg	Sync. Amp. Grid
R69	470KΩ	5% ½	RC20AE474K	BTS-470K-5%	Current Limiting
R70	100KΩ	½	RC20AE104K	BTS-100K	Sync. Amp. Plate
R71	100KΩ	½	RC20AE104K	BTS-100K	Phase Det. Grid
R72	100KΩ	½	RC20AE104K	BTS-100K	Phase Det. Cathode
R73	68KΩ	½	RC20AE683K	BTS-68K	Phase Det. Plate
R74	22KΩ	20% ½	RC20AE223M	BTS-22K	Voltage Divider
R75	2200Ω	½	RC20AE222M	BTS-2200	Voltage Divider
R76A	22KΩ	½	V-9213 *		Integrator
B	8200Ω	½			Integrator
C	8200Ω	½			Integrator
R77	470KΩ	½	RC20AE474K	BTS-470K	Vert MV Grid
R78	1200Ω	½	RC20AE122K	BTS-1200	Vert. MV Cathode
R79	100KΩ	½	RC20AE104K	BTS-100K	Vert. MV Plate
R80	10KΩ	½	RC20AE103K	BTS-10K	Vert. Peaking
R81	2.2Meg	½	RC20AE225K	BTS-2.2Meg	Vert. Output Grid
R82	470Ω	½	RC20AE471K	BTS-470	Vert. Output Cathode
R83	470Ω	½	RC20AE471K	BTS-470	Vert. Output Decoup
R84	5600Ω	½		BTS-5600	Damping - See Note 1
R85	470KΩ	½	RC20AE474K	BTS-470K	Isolation
R86	47KΩ	½	RC20AE473K	BTS-47K	Horiz. AFC Filter
R87	150KΩ	½	RC20AE154K	BTS-150K	Horiz. MV Grid
R88	1200Ω	½	RC20AE122K	BTS-1200	Horiz. MV Cathode
R89	27KΩ	½	RC20AE273K	BTS-27K	Horiz. MV Plate
R90	56KΩ	1	RC30AE563K	BTA-56K	Horiz. MV Plate Decoup
R91	270KΩ	½	RC20AE274K	BTS-270K	Horiz. MV Plate
R92	33KΩ	½	RC20AE333K	BTS-33K	Decoup
R93	12Ω	20% ½	RC20AE121M		Parasitic Supp.
R94	470KΩ	½	RC20AE474K	BTS-470K	Horiz. Output Grid
R95	33Ω	2	RC40AE330K	BW-2-33	Horiz. Output Cathode
R96	18KΩ	2	RC40AE183K	BTB-18K	Horiz. Output Screen
R97	39KΩ	½	RC30AE393K	BTA-39K	Horiz. Output Screen
R98	12KΩ	½	RC20AE123K	BTS-12K	Horiz. Peaking
R99	5600Ω	20% ½	RC20AE562M	BTS-5600	Horiz. Linearity Coil Shunt
R100	470KΩ	1	RC30AE474K		HV Filter
R101	22KΩ	½	RC20AE223K	BTS-22K	Voltage Divider
R102	100KΩ	½	RC20AE104K	BTS-100K	Vert. MV Plate Decoup
R103	180KΩ	1	RC30AE184K	BTA-180K	Isolation
R104	11Ω	5			Width Coil Shunt - Wire Wound - See Note 3
R105	4700Ω	½		BTS-4700	Mixer Grid Coil Shunt

* Items R76A, R76B, R76C, C69A, C69B, C69C are combined into one unit.
Note 1. Note used in all models.
Note 2. Some models use 22KΩ resistor in this application.
Note 3. Some models use 220KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @1.82A	650VCT @ 3A	5V @6.6VCT 3.5A		V9958-2		P-3066 ①	PH-200

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	380Ω Tap 65Ω	9.5Ω Taps .5Ω and 8.2Ω 8EC. 2 0Ω	V-10204-1		HV0-6		Horizontal Output
T3	650Ω	7.8Ω	V6981-3	A-8112	A-3038	TS0-5	Vertical Output
T4A	13Ω		V-10045-2	DY-7	MD-70		Horiz. Deflection Coil
B	58Ω		V-10045-3				Vert. Deflection Coil

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T5	7.4KΩ CT	3.2Ω	440Ω CT	.9Ω	V-9983		A-2938 ①	R0-304 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Westinghouse PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.2Ω	V-9431-2	12J12	12A31	
	CONE DIA.	V. C. DIA.				
S P2	11 1/2"	1"				

FILTER CHOKE

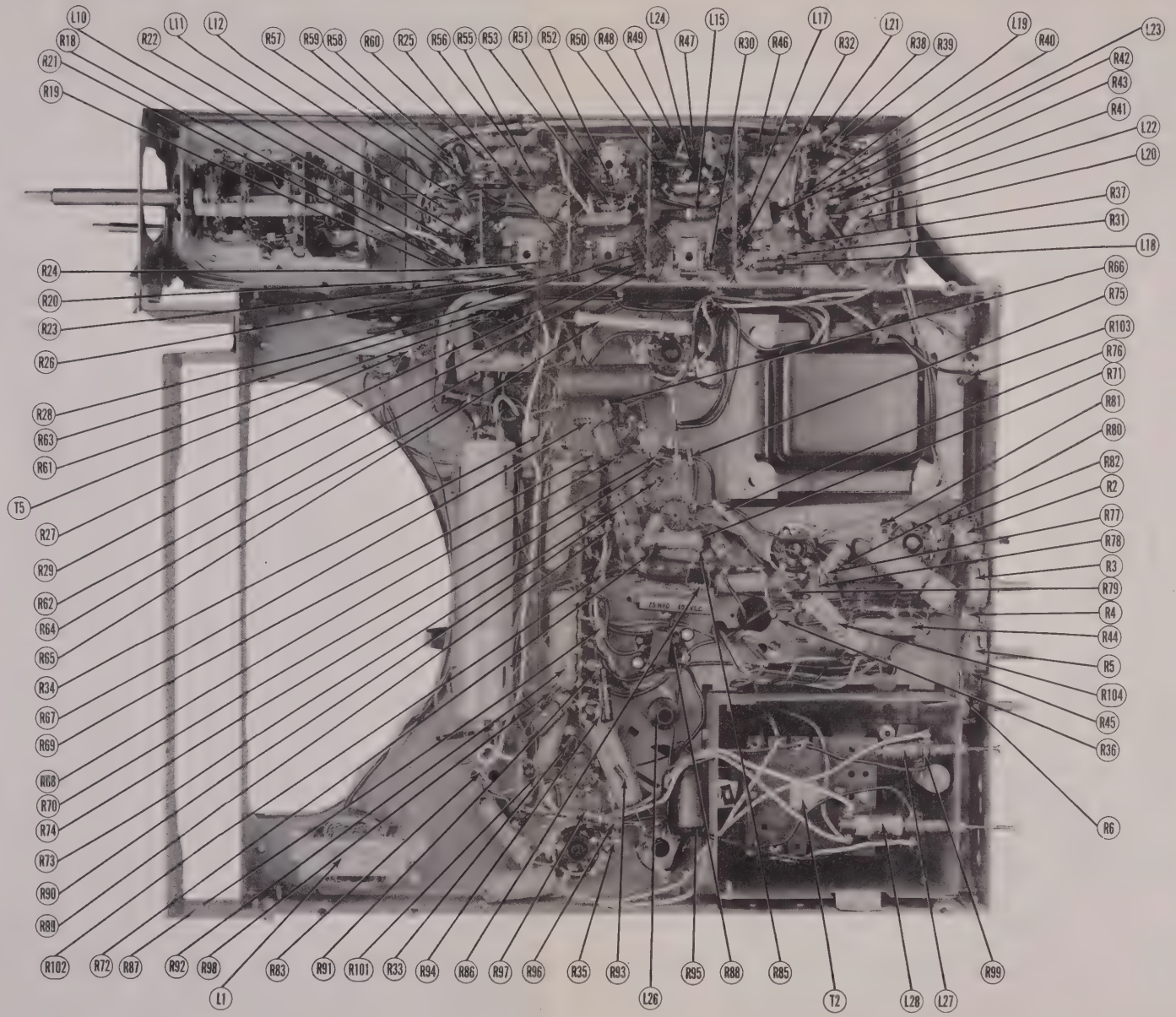
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.225ADC	36Ω	1.2 Henries	V-6471-2	C-2326 ①	C-2974	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	IRC PART No.	
L2	Antenna Coil	.1Ω	.1Ω				Part of Tuner Part # V-9886-5
L3	Antenna Coil	.1Ω	.1Ω				Part of Tuner Part # V-9886-5
L4	RF Coil	0Ω					Part of Tuner Part # V-9886-5
L5	Mixer Grid Coil	0Ω					Part of Tuner Part # V-9886-5
L6	Osc. Coil	0Ω					Part of Tuner Part # V-9886-5
L7	Osc. Coil	0Ω					Part of Tuner Part # V-9886-5
L8	1st Video IF	.1Ω	.1Ω				Part of Tuner Part # V-9886-5
L9	Fil. Choke	.1Ω		V-4886-2			1.1 Microhenries
L10	1st Video IF Coupling	.1Ω	.1Ω	V-9881-1			
L11	Sound Trap	.1Ω		V-9501-1			1.1 Microhenries
L12	Fil. Choke	.1Ω		V-4886-2			1.1 Microhenries
L13	2nd Video IF	.5Ω	.4Ω	V-9879			
L14	3rd Video IF	.5Ω	.4Ω	V-9879			
L15	Fil. Choke	2.6Ω		V-9099-4		CL-1	3.9 Microhenries
L16	4th Video IF	.5Ω	.4Ω	V-9880			
L17	Sync. Decoupling	1.3Ω		V-4886-1			14 Microhenries
L18	Peaking	7.5Ω		V-9915-1	19-1920		100 Microhenries
L19	Noise Limiter Decoupling	1.3Ω		V-4886-1			14 Microhenries
L20	Peaking	14Ω		V-9915-2	19-1923		350 Microhenries
L21	Peaking	18Ω		V-9915-3	19-1923		500 Microhenries
L22	Video Decoupling	1.3Ω		V-4886-1			14 Microhenries
L23	1st Sound IF	.8Ω		V-9882-1			
L24	2nd Sound IF	.8Ω		V-9882-1			
L25	Ratio Det. Trans.	4.3Ω	1.4Ω	V-9884			
L26	Ringing Coil	65Ω		V-6764			
L27	Horiz. Lin.	20Ω		V-9960			
L28A	Width Coil	.9Ω	100Ω	V-9902			
B	Width Coil			V-10147-1			Not Used In All Models

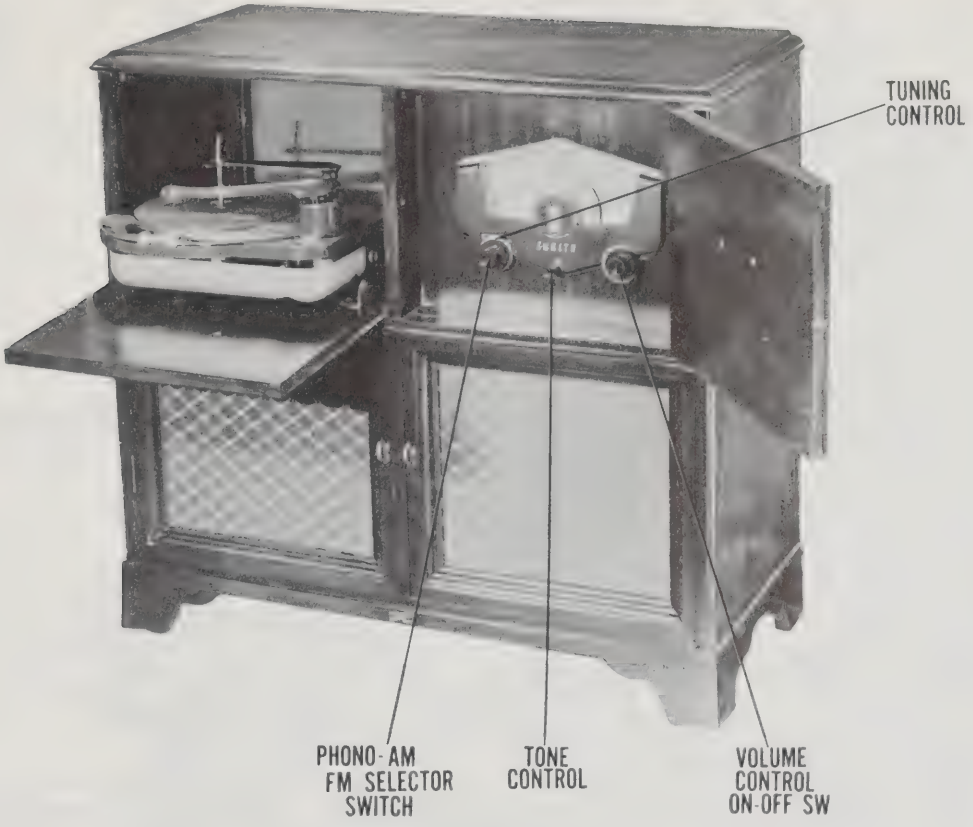
MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1A	RF Tuner	V-9886-5	
B	RF Tuner	V-9886-6	Alternate
M2	Focus Magnet	V-10206-3	
M3	Ion Trap	V-9784-2	
	Safety Glass	V-10299-2	
	Escutcheon	V-9953-4	
	Knob	V-9941-1	Channel Selector
	Knob	V-9940-1	Fine Tuning
	Knob	V-9939-1	Brightness
	Knob	V-9938-1	Volume



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

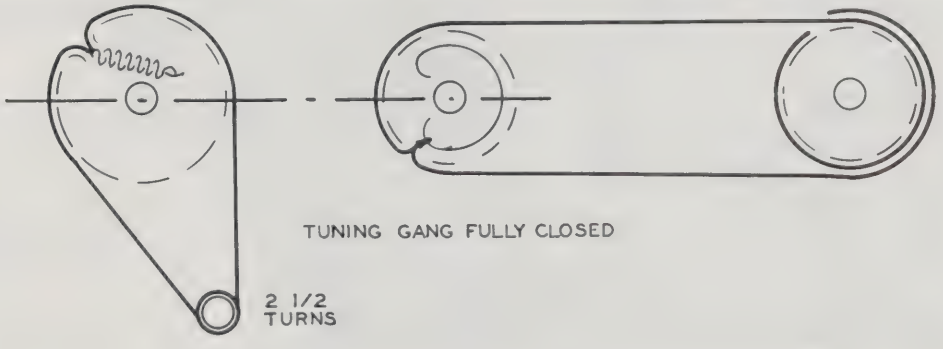
ZENITH MODELS H880,
H880R (Ch. 8H20 REVISED)



ZENITH MODEL H880R

TRADE NAME	Zenith, Models H880, H880R (Ch. 8H20 Revised)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver With Loop Antenna		
TUBES (EIGHT)	Types 12BA6 RF Amp., 12AT7 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 12AU6 Limiter, 19T8 Discr. -Det.-AVC-AF, 25L6GT Power Output, 25Z5GT Rectifier		
POWER SUPPLY	110-120 Volts AC	RATING	.67 Amp. @ 117 Volts AC
TUNING RANGE- BROADCAST	540-1620KC	FREQ. MOD.	88-108 MC

RECORD CHANGER -- ZENITH MODEL S-14029



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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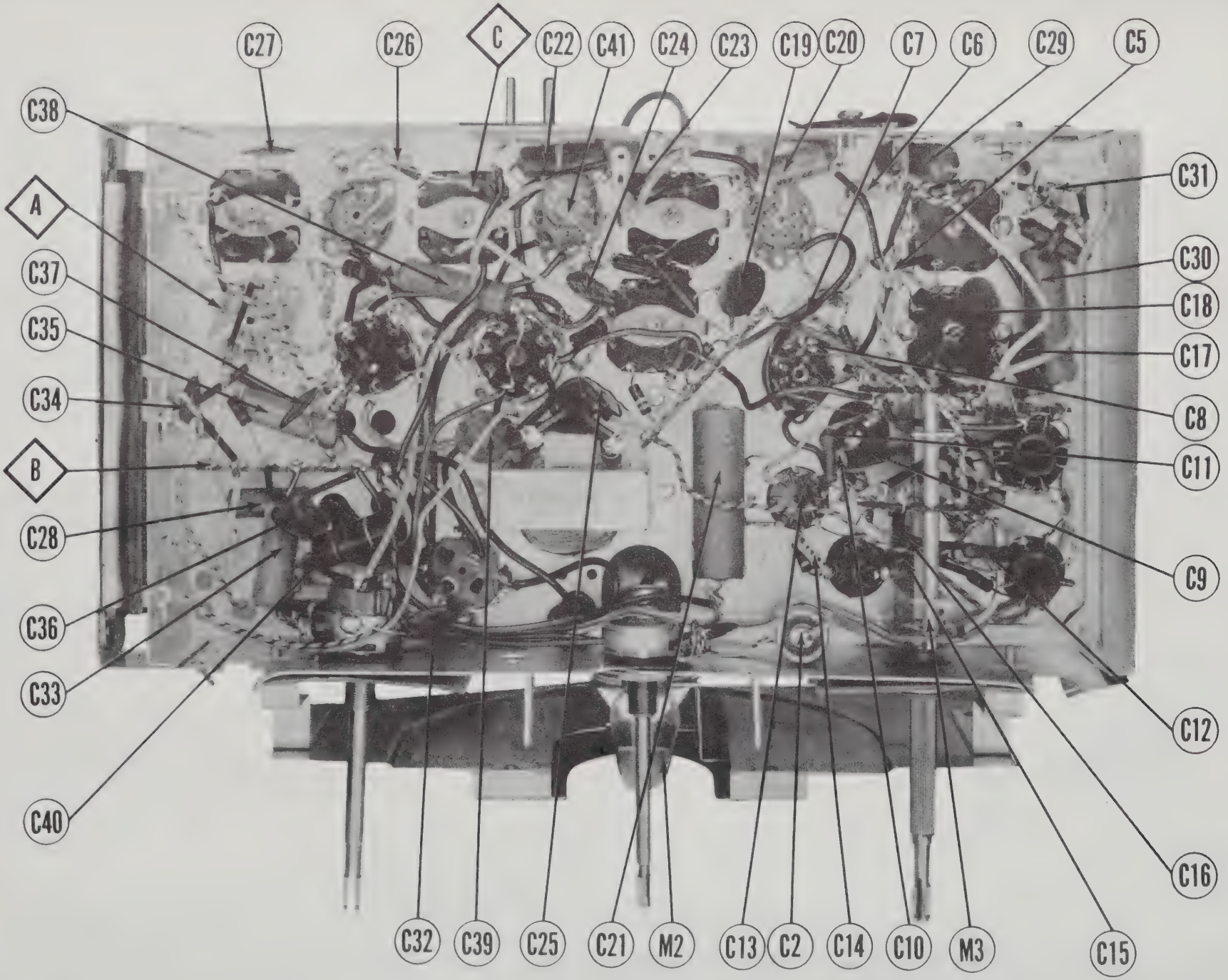
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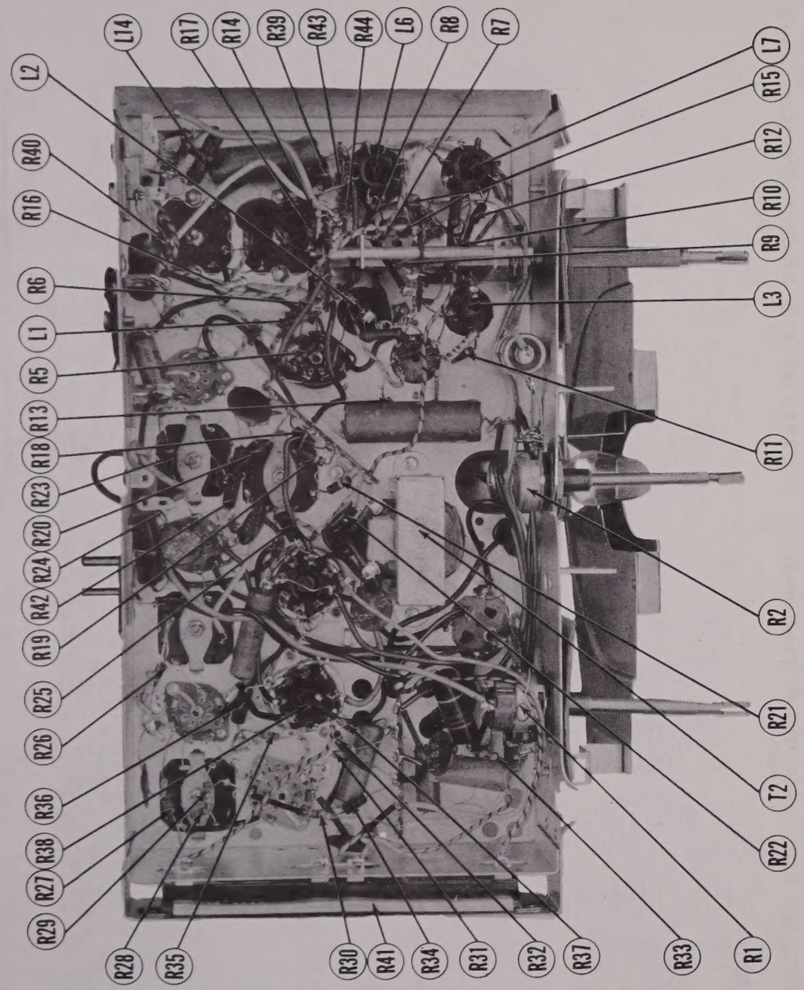

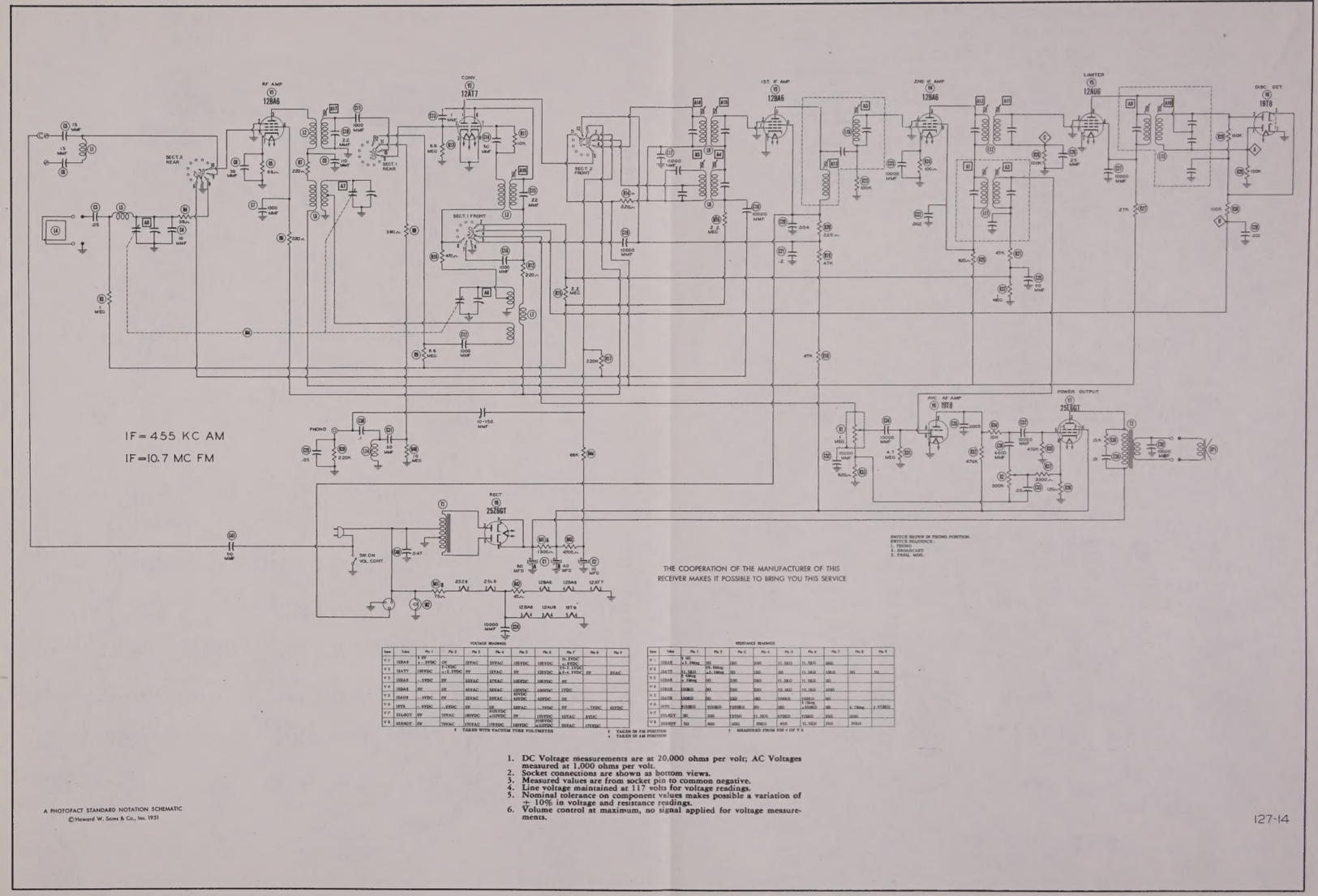

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	0 DC 6 - 7VDC	CR 1.2 VDC	12VAC	32VAC	18VDC	18VDC	H. 115VAC L. 6VDC		
V 2	12AT7	18VDC	1.2 VDC to 3.7VDC	0V	32VAC	0V	20VDC	H. 115VAC L. 2.5 VDC	0V	32VAC
V 3	12BA6	0 VDC	0V	32VAC	32VAC	18VDC	18VDC	0V		
V 4	12BA6	0V	0V	65VAC	32VAC	120VDC OR 0VDC	130VDC	0VDC		
V 5	12AU6	0 VDC	0V	32VAC	32VAC	0VDC OR 6VDC	42VDC	0V		
V 6	19T8	0 VDC	0 VDC	0V	0V	32VAC	32VAC	0 VDC	0V	0 VDC
V 7	25L6GT	0V	12VAC	0VDC	0 VDC OR 6VDC	0V	115VDC OR 0VDC	107VAC	32VAC	
V 8	25Z6GT	0V	12VAC	115VAC	0VDC	0VDC	115VDC OR 0VDC	32VAC	115VDC	

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	0 Ω 4.5 Meg	150	330	330	11.5KΩ	11.5KΩ	68Ω		
V 2	12AT7	0 Ω 2.5 MEG	0 Ω 14.5Meg	0Ω	330	0Ω	11.5KΩ	10KΩ	0Ω	0Ω
V 3	12BA6	0 Ω 4.5Meg	0Ω	0Ω	330	330	11.5KΩ	0Ω		
V 4	12BA6	100KΩ	0Ω	0Ω	150	520	11.5KΩ	11.5KΩ	0Ω	
V 5	12AU6	100KΩ	0Ω	0Ω	150	1MΩ	1.5MΩ	1.5MΩ 4.5MΩ	0Ω	
V 6	19T8	510KΩ	510KΩ	510KΩ	0Ω	1MΩ	1.5MΩ 4.5MΩ	0Ω	4.7Meg	470KΩ
V 7	25L6GT	INC.	0Ω	330Ω	330Ω	11.5KΩ	470KΩ	150Ω	330Ω	
V 8	25Z6GT	0Ω	0Ω	180Ω	180Ω	80KΩ	45Ω	11.5KΩ	330Ω	330Ω

† MEASURED FROM PIN 4 OF V 8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown at bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

To set pointer, turn tuning gang fully closed and set pointer to the calibration dot at the low frequency end of the dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	455KC (400 ~ Mod.)	BC (center)	Tuning gang fully closed	Across voice coil.	A1, A2, A3, A4, A5	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1400KC	"	1400KC	"	A6, A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect a 2 megohm isolating resistor in series with the VTVM DC probe.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	.05MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM (CW)	Tuning gang fully closed	DC probe thru 2 meg to Point ⓐ Common to chassis.	A9	Adjust for maximum deflection.
4.	"	"	"	"	"	DC probe to Point ⓑ Common to chassis	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
5.	"	High side to pin 2 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	DC probe to Point ⓒ Common to chassis.	A 11, A12, A13	Adjust for maximum deflection.
6.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A14, A15	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 % modulation and 450KC sweep. Use 120 % sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	.05MFD	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	10.7MC (450 KC SWP)	FM (CW)	Point of non-interference	Vert. amp. thru 1 meg to Point ⓓ Low side to chassis.	A 11, A12, A13	Adjust for maximum amplitude and symmetry as per figure 1.
4.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A14, A15	"
5.	"	"	"	"	"	Vert. amp. thru 1 meg to Point ⓔ Low side to chassis.	A10, A9	Adjust A10 so 10.7MC occurs at center of crossover lines as per figure 2. Adjust A9 for max. amplitude and straightness of crossover lines. Continue with step 7.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω carbon resistor	High side thru 270Ω to FM antenna terminal (remove line antenna). Low side to chassis.	98MC (Unmod.)	FM	98MC	DC probe to Point ⓕ Common to chassis.	A16, A17	Adjust for maximum deflection.

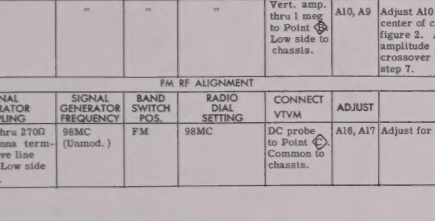


FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12AT7	12AT7	9A	
V3	1st IF Amplifier	12BA6	12BA6	7BK	
V4	2nd IF Amplifier	12BA6	12BA6	7BK	
V5	Limiter	12AU6	12AU6	7BK	
V6	Discr.-Det.-AVC-A.F Amp.	19T8	25L6GT	9E	
V7	Power Output	25L6GT	25L6GT	7AC	
V8	Rectifier	25Z5GT	25Z5GT	8E	

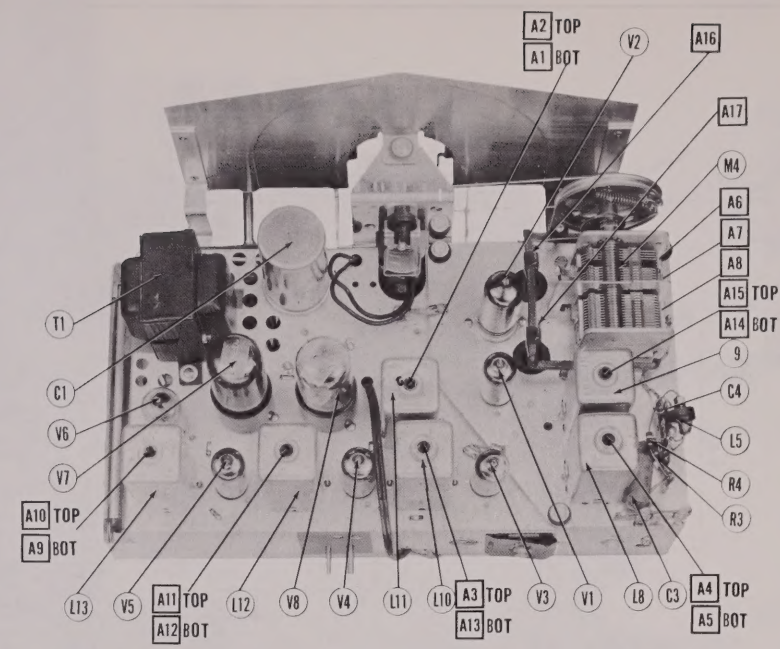
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ZENITH PART No.	REPLACEMENT DATA AEROVOX PART No.	REPLACEMENT DATA CENTRALAB PART No.	REPLACEMENT DATA CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	250	22-2105	AF8887		UPE8425		TVL-2562	• Filter
B	40	250							• Decoupling
C2	10	250	22-2154	PR8250/12		BR1025		TYA-1504	1st IF Coupling
C3	.05	200	22-929	P288-05		PTE4S5		27M-55	Ant. Coupling
C4	.1			5150	DF-503	5W5Q1	GP1K-10	19C19	Fixed Trimmer
C5	15			5115	D6-100	PTE4S5	GP1K-15	19C23	Ant. Coupling
C6	15		22-2140	5115	D6-150	5W5Q2	GP1K-15	19C23	Ant. Isolation
C7	1000		22-1676	5U1000	D6-102	1W5D1	GP2L-001	19C1	RF Amp. Screen
C8	39		22-1705	5U39	D6-390	5W5Q4	GP1K-44	19C29	RF Amp. Cathode
C9	10		22-1	5U120	D6-121	5W5T1	GP2K-120	19C29	RF Amp. Plate Dec.
C10	22		22-1506	5U22N080			N080-331-22		Fixed Trimmer
C11	1000		22-1676	5U1000	D6-102	1W5D1	GP2L-001	19C1	RF Coupling
C12	1000		22-1676	5U1000	D6-102	1W5D1	GP2L-001	19C1	Osc. Coupling
C13	1		22-1762		DC-1-1				Osc. Grid Cap
C14	50		22-1507	5150	D6-500	5W5Q5	GP1K-50	19C28	Fixed Trimmer
C15	22		22-1506	5U22N080			N080-331-22		Osc. Plate Dec.
C16	1000		22-1676	5U1000	D6-102	1W5D1	GP2L-001	19C11	Conv. Plate Dec.
C17	10000			BPD-01	DD-103	PTE8S1	821-01	36C1	AVC Filter
C18	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	Audio Coupling
C19	1000	600	22-3	P688-004	D6-102	PTE8S1	GP2M-004	67M-D4	1st IF Decoupling
C20	.1	400	22-448	P488-23	D6-402	GT4P2		41M-P22	Phono Pre-Amp. Dec.
C21	.2	400	22-177			PTE6D2	GP2M-002	67M-D2	2nd IF Dec.
C22	.002	600	22-1220	P688-002	D6-202	PTE8S1	821-01	36C1	2nd IF Cathode
C23	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	2nd IF Coupling
C24	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	Diode RF Filter
C25	10		22-1	5U20	D6-121	5W5T1	GP2K-120	19C29	Limiter Grid Filter
C26	25		22-1507	5125	D6-250	5W5Q25	GP1K-25	19C27	Limiter Dec.
C27	10000		22-3	BPD-01	D6-103	PTE8S1	821-01	36C1	De-emphasis
C28	.001	200	22-1717	P688-001	D6-102	PTE8D1	GP2L-001	67M-D1	Disc. Isolation
C29	.05	200	22-929	P288-05	DF-503	PTE4S5		27M-55	Phono Osc. Grid
C30	.1	200	22-2127	P288-1	DF-104	PTE4P1		27M-P1	Phono Osc. Feedback
C31	50		22-1507	5150	D6-500	5W5Q6	GP1K-50	19C28	Vol. Cont. Isolation
C32	10000	200	22-3	BPD-01	D6-103	PTE4S1	821-01	36C1	Tone Comp.
C33	.05	200	22-929	P288-05	DF-503	PTE4S5		27M-55	Audio Coupling
C34	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	Audio Coupling
C35	.0005	600	22-1644	P688-0005	D6-501	PTE6D2	GP2K-500	67M-T5	Audio Plate
C36	4000	600	22-964	BPD-004	D6-402	PTE8D4	GP2M-004	67M-D4	Tone Comp.
C37	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	Audio Coupling
C38	.01	600	22-669	P688-01	D6-103	PTE8S1	821-01	67M-S1	Tone Comp.
C39	10000		22-3	BPD-01	DD-103	PTE8S1	821-01	36C1	Fixed Trimmer
C40	.047	400	22-1775	P468-047	D6-473	PTE4S5		27M-S47	Line Ant. Coupling
C41	110		22-3	5U10	DF-191	5W5T1	GP2K-120	19C29	Line Ant. Coupling

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2131	QU-137	ACQ-61-8	AN-69	Volume Control
B	Shaft		Not req.	Not req.	ASQ-63	AS-4	Attach to R1A Per Instructions
C	Switch		Not req.	78-1	8WB	K-155	Attach to R1A Per Instructions
R2A	500KΩ	½	63-2132	QU-133		SB-209	Tone Control
B	Shaft		Not req.	Not req.		Not req.	Attach to R2A Per Instructions

• Cut 7Q Shaft To Correct Length So That When E-190 Is Attached Total Length Is Correct.

CHASSIS—TOP VIEW